THE ROLE OF JOB DEMANDS AND JOB RESOURCES IN PREDICTING PRINCIPAL JOB SATISFACTION: A CROSS-NATIONAL, MULTILEVEL ANALYSIS

by
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Abstract

Despite ample descriptive data about high international turnover rates of school principals, the factors associated with principal job dissatisfaction—and, distally, with higher reported desires to leave—are inadequately understood. This limits the ability of leaders in schools, districts, states, and country-level institutions to understand why principals leave their jobs. This also limits policymakers' abilities to build supports to increase principal tenure and leadership capacity. While teacher satisfaction has been well studied, the same cannot be said for principal satisfaction. This study advances the literature by using the internationally representative 2018 Teaching and Learning International Survey to investigate how school environments and principal characteristics are associated with the ways principals think about their jobs or careers. By using hierarchical linear models within the jobs-demands resources theoretical framework, this study examines how principal characteristics, principal workplaces, principal organizational supports, and school contexts are related to job satisfaction. The findings of this study shed light on how school stakeholders may be able to increase principal satisfaction and commitment through targeted interventions.

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Contents

List of Tables

List of Figures

Chapter 1: Introduction

School leadership is a notoriously demanding job, and one that grows more stressful year-by-year (Grissom, Loeb, & Mitani, 2015; Knapp & Feldman, 2012; Wells & Klocko, 2015). A widely-circulated Met Life study of U.S. principals in 2012 found that principal job satisfaction was at its lowest point since the turn of the century, with only 59% of principals reporting they were satisfied with their jobs (Markow et al., 2013). Their study reported that over 75% of the 500 principals surveyed acknowledged that their jobs had become too complex to be sustainable and half of the principals reported experiencing great stress almost every day. The magnitude of these findings have been confirmed in studies of school leaders spanning the globe: from nationally representative samples of U.S. principals (Mitani, 2018), Australian principals (Beausaert et al., 2016), and Irish principals (Darmody & Smyth, 2011) to smaller representative samples of principals in Enugu State, Nigeria (Chukwuma et al., 2018) and in Midwestern U.S. cities (Kaufman, 2019; Wells & Klocko, 2015). These studies also found low rates of optimism about their current jobs, high levels of chronic stress, and even adverse health outcomes, all related to principal job satisfaction.

An additional body of literature has shed light on the changing work of principals, even in the last two decades. Principals enjoy less autonomy but are held accountable for increasingly complex schools. They must work with tighter budgets while supporting demographic changes (Miller & Martin, 2015; Wildy & Louden, 2000). They must market their schools and stay on top of the relentless pace of technological changes (Crow, 2006; López et al., 2012; Sun & Ni, 2016). Dozens of studies have linked these changes to dramatic growth in leadership turnover over the same amount of time (Snodgrass Rangel, 2018). The secondary effects of leadership turnover go beyond an individual school leader. Principal turnover increases teacher

dissatisfaction and teacher turnover (Player et al., 2017). Year-to-year leadership turnover weakens student achievement in the short-term and chronic leadership turnover weakens student achievement in the long long-term (Grissom et al., 2015). On a macro level, turnover stymies efforts to recruit future school leaders, contributing to a well-documented shortage of principals around the world (Strickland-Cohen et al., 2014; Whitaker, 2003). What is the relationship between these school leadership working demands and principal job satisfaction?

This dissertation seeks to disentangle the relationships between principal working life, school and educational policy environments, and principal job satisfaction. It aims to guide policymakers and principals interested in understanding how resources available to principals might moderate the relationship between job demands and job dissatisfaction. To examine this question using international data, I employed hierarchical linear modeling (HLM) on the 2018 Teaching and Learning International Survey (TALIS). To contextualize this study, the rest of this introduction describes the general landscape of research on principal turnover and job satisfaction. It explores why job satisfaction matters and what this study contributes to the existing research literature.

Background of the Problem

Principal turnover, especially turnover in demanding schools, is a major impediment to school improvement (Béteille et al., 2012; Mascall & Leithwood, 2010; Rowan & Denk, 1984; Snodgrass Rangel, 2018). Principal turnover in the United States hovers around 18% per year, which is higher than teacher turnover (Goldring & Taie, 2018). Contemporary long-term studies indicate that half of the newly hired principals leave their schools after four years, and up to 80% leave after six years (Gates et al., 2006). A review of principal turnover literature showed that schools with larger concentrations of minority students, low-income students, and students with

low performance experienced year-over-year principal turnover rates as high as 25% (Snodgrass Rangel, 2018). The National Center for Educational Statistics 1999-2000 Schools and Staffing Survey (SASS) indicated that half of the 8,524 U.S. public school principals had served for fewer than five years in their current position (Miller, 2009, 2013). Newer versions of the SASS have indicated even steeper declines in principal tenure during the accountability era, especially in higher-poverty schools (Miller, 2009, 2013). This well-documented churn has led to shortages of qualified principals in districts around the United States (Mascall & Leithwood, 2010). Similarly, steep numbers and labor market patterns have been reported in international contexts (Griffith, 2004). Studies in the Netherlands, Nigeria, New Zealand, United Kingdom, Ireland, and the United States have shown that turnover and burnout among principals is among the highest of all professions that require higher education (Boyland, 2011; Darmody & Smyth, 2011; Evers et al., 2001; Hodgen & Wylie, 2005; Okoroma & Robert-Okah, 2007; Phillips & Sen, 2011).

While principal turnover can have positive outcomes if poorly performing principals leave schools, empirical studies have linked principal attrition with a decline in school performance, an increase in teacher turnover, and lower graduation rates (Snodgrass Rangel, 2018). In a recent study of schools in the southern United States, researchers found that schools which change principals had higher rates of teacher turnover and lower achievement in math and reading (Bartanen et al., 2019). In a qualitative study of leader transitions in New York City, researchers found that graduation rates and school organizational stability structures (e.g., relationships with faculty and students or student accountability systems) declined measurably during the transition between principals (Weinstein et al., 2009). Similar findings were reported by Branch, Hanushek, and Rivkin (2009) using Texas administrative data and by Beteille et al. (2012) using Miami-Dade administrative data. Examining longitudinal administrative data from

North Carolina public schools, Miller (2013) found a two-year decline in school performance following the departure of a principal. Mascall and Leithwood (2010) found that principal turnover correlated with adverse effects on student achievement, helping to explain at least 11% of the variance in student achievement. Using additional qualitative interviews, the researchers suggested a link between inexperienced principals and inconsistent school policies and culture, uneven district improvement efforts, lowered teacher morale, and increased teacher turnover (Mascall & Leithwood, 2010). High administration turnover is also an expense to school systems as each leader exit is estimated to cost districts over $75,000 (Jensen, 2014). The rate and widespread consequences of principal turnover are troubling precisely because of the importance of principals in the success of the schools they lead.

How can policymakers reverse this trend in principal turnover? Increasing principal compensation is an oft-recommended policy to reduce attrition (Branch et al., 2009; Clotfelter et al., 2006; Tran, 2017). Still others suggest reworking accountability practices that burden principals (Mehta, 2015; Wildy & Louden, 2000). A group of contemporary scholars suggest introducing new forms of distributed leadership to reduce principal responsibilities and stress (Camburn et al., 2003; Spillane et al., 2004). Studies of these and other interventions in practice, however, have resulted in mixed findings (Snodgrass Rangel, 2018). These studies are, perhaps, missing important information about the context and challenges of school leadership, information that this dissertation ultimately seeks to uncover.

According to these studies, improvements in leadership compensation, shifts in accountability practices, and distributed leadership interventions are all aimed at changing either the day-to-day work environment of principals or the incentive structure to continue this work. Few of these intervention studies have explicitly mentioned the metric these practices are

ultimately attempting to change, namely how satisfied are principals are with their positions. Unsatisfied principals are more likely to change jobs, retire early, or leave the principalship altogether (Boyce & Bowers, 2016b; Tekleselassie & Villarreal, 2011).

Unhappy white-collar workers leave jobs more frequently (Spector, 1997). Tekleselassie and Villarreal (2011), in studying the emotional aspects of principals' work using the 2008 Schools and Staffing Survey in the United States, found that satisfied principals were 36% less likely to report a desire to change schools and 20% less likely to leave the principalship. Similarly, principals who felt a commitment to their jobs were 33% less likely to change schools and 47% less likely to report a desire to leave the profession. Finally, Tekleselassie and Villarreal (2011) found that principals who were enthusiastic about their jobs were 34% less likely to leave their schools and 37% less likely to report a desire to leave the profession. Boyce and Bowers (2016b) used latent class analysis to group principals who left their schools. Their two groups, dissatisfied principals and satisfied principals, indicated that unsatisfied principals have higher rates of turnover. Furthermore, schools with dissatisfied principals had more frequent instances of student fights, bullying, and teacher disrespect (Boyce & Bowers, 2016).

Principal job satisfaction matters beyond just turnover intentions. Workplace satisfaction theory, which will be explored in more depth in Chapter 2, posits a positive relationship between leadership job satisfaction and personal productivity, morale, organizational commitment, and tenure (Bakker & Demerouti, 2007; Prieto et al., 2008). Given the centrality of the principalship within school climates (Hallinger & Heck, 1996; Leithwood et al., 2004), these positive relationships have domino effects on teachers, students, and other stakeholders. Theory has demonstrated that principal job satisfaction indirectly affects student achievement by increasing teacher job satisfaction and, with it, teacher productivity, attendance, morale, organizational

commitment, and tenure (Béteille et al., 2012; Derlin & Schneider, 1994; Duyar et al., 2013; Hakanen et al., 2006). However, this virtuous cycle can sour for unsatisfied principals, leading to the opposite organizational effects. These adverse effects can distally contribute to inequality within schools as unsatisfied leaders and teachers systematically relocate to more advantaged schools (Boyd et al., 2008; Ronfeldt et al., 2013). Adverse effects can also contribute to strained principal pipelines as potential school leaders are disenchanted by the job's reputation (Browne-Ferrigno & Muth, 2010; Cheney et al., 2010).

Job satisfaction also matters in and of itself. As we will soon see, few theorists and even fewer researchers consider satisfaction a desideratum beyond its cost to the efficiency or performance of educational organizations. Yet job satisfaction is personal. Principals who choose school leadership as a career are making a personal, and sometimes lifelong investment in their work (Béteille et al., 2012; Pijanowski & Brady, 2009). Principals also make personal sacrifices in the form of long hours and acute or chronic stress (Sebastian et al., 2018; Spillane & Hunt, 2010). A principal can only operate so long in what Karasek (1979) deemed "high strain" environments with few resources to support them (p. 285). If little can be done to reduce the ever-growing demands of the principalship, policymakers should at least explore the most effective ways to support the position.

More studies have been conducted on job satisfaction than any other variable in the field of organizational and industrial psychology (Spector, 1997). The general antecedents and consequences of job satisfaction have been studied across professions, though the unique role of the principal makes generalizing these studies to the principalship tenuous. The disjointed and fractious day-to-day work of principals cannot be easily mapped onto job satisfaction studies of business administrators, CEOs, or public servants. The factors that support school leadership job

satisfaction are also different from university administrators and, as will be discussed in much greater detail, school teachers (Bozeman & Gaughan, 2011; Duyar et al., 2013). Principal-specific studies that consider the multi-faced and complex nature of the role are sparse; therefore, policymakers and researchers are left with little besides intuition on which to base policy decisions. A study disaggregating the relationship between job satisfaction and a range of variables could help pinpoint policy recommendations and areas for future research.

The Teaching and Learning International Survey (TALIS) 2018 dataset offers a rich collection of new variables to measure principal job satisfaction and factors hypothesized to be associated with this measure. TALIS 2018 uses questions about principals' satisfaction with their job in their current school augmented with questions about their satisfaction with the principalship as a profession. A battery of questions about principal demands (e.g., the burdens of administrative work, school discipline, and other stressors) provide a more complete picture of principals' everyday experiences in their work. This study leverages the dataset of TALIS 2018 to explore variation in principal job satisfaction across the globe and its relationship to job demands and job supports.

Summary of the Problem

As central leaders in school effectiveness, principals guide teachers, students, and school stakeholders. The expansive demands and difficulties of the principalship are leading to persistent and even alarming rates of leadership turnover. Over five decades of research have linked principal job satisfaction to turnover and antecedents to turnover, such as stress and burnout. As Chapter 2 demonstrates, much remains to be learned about how principal job satisfaction is related to principal job demands and job resources, such as professional development or coaching. This dissertation contributes to the literature by exploring this

relationship among principals from nearly 50 different countries and, in some sections, using smaller subsamples of principals from fewer countries. Countries, states, and educational districts that face principal shortages or high principal turnover may have few research-supported tools to guide policy. With knowledge about which factors have positive relationships on principal job satisfaction, policymakers might better anticipate both the individual and collective needs of school leaders and design interventions to increase principal job satisfaction.

Study Outline

This study uses hierarchical linear modeling (HLM) to analyze select data from the 2018 TALIS. The guiding research questions for the analysis are:

1. To what extent does principal job satisfaction vary within and across countries?
2. Which school resources are positively associated with job satisfaction and which school demands are negatively associated with job satisfaction?
3. Do the hypothesized job demands and job resources variables fit into unidimensional demands and resources factors and do they form scales?
4. How does the level of school resources moderate the relationship between school demands and principal job satisfaction? To what extent is this hypothesized relationship stronger for principals who report lower levels of resources, compared to those who perceive higher levels of resources?
5. To what extent does the relationship between demands and resources on job satisfaction vary within-country and between countries? What might explain these contextual differences?

6. How do country-level investments in education change the relationship between demands and resources on job satisfaction? How is this subsample of OECD countries different from the larger sample? How does the United States compare to these other countries?

Chapter 2 contextualizes this study within the theoretical framework of job satisfaction in both general leadership contexts and within school contexts. By providing a more detailed review of the organizational and educational literature on leadership organizational supports and principal job satisfaction, this chapter also situates the research questions within empirical work on the subject. Chapter 3 details the research questions and hypotheses and discusses the TALIS data source. This chapter also outlines the plan for data analysis in this study. Chapters 4 and 5 summarize findings from the research questions. Chapter 4 specifically examines the relationships among principal job supports, job demands, and job satisfaction within the HLM framework. Chapter 5 then focuses on international variation in job satisfaction. This chapter also explores how the level of school resources moderates the relationship between school demands and principal job satisfaction. Chapter 6 summarizes the main conclusions of this study and its implications for principals and principal support structures. This study concludes with recommendations for future research.

Chapter 2: Review of Literature

Understanding the complex nature of principal job satisfaction requires a historical understanding of the role of school leaders in international contexts, a theoretical framework to understand job satisfaction, and a comprehensive review of the accumulated knowledge about the predictors of principal job satisfaction. Each of these threads contributes to our understanding of the contemporary work-life of principals and sets the stage for studying principal job satisfaction using the TALIS database. This chapter weaves these threads together.

The Changing Roles of Principals

Principals are the second most important school-related factor that influences student learning, second only to the quality of classroom instruction (Louis et al., 2010). Research on school leadership has repeatedly concluded that long-term leadership effectiveness is critical to support student achievement (Hallinger & Heck, 1996; Hallinger & Murphy, 1987; Robinson et al., 2008; Sebastian et al., 2018; Waters et al., 2003). Many studies have found that successful principals indirectly influence student development by establishing the school's mission, recruiting and developing teachers, guiding the school's learning culture, and supporting instructional development (Branch et al., 2012; Darling-Hammond et al., 2007; Hallinger & Murphy, 1987). Given how important only one position is to the success of schools, efforts to improve schools have paid attention to their leaders. The school principalship has therefore undergone rapid changes in the past century as waves of improvement efforts have attempted to change the scope of their responsibilities.

The principalship has been molded by social, legislative, and cultural forces, and has evolved into a complex and often unsustainable role. Cuban's (1988) historical study of the principalship tracked the increasing managerial requirements of principals to plan, hire, budget,

maintain, and schedule the inner workings of schools in the United States. Cuban (1988) noted how principals' expected responsibilities have evolved in the last 150 years to include a multitude of overlapping, expanding, and conflicting tasks. The first school principals were also teachers given the small size of schools in the 19th century United States. Pierce's (1935) early history of the principalship also noted that principals were initially thought of as "principal teachers," teachers assigned with nominal managerial tasks (p. 11). These tasks gave them insight into student needs and the formal curriculum. Cuban (1988) noted that as small schoolhouses gave way to larger school buildings, the principal's job moved further away from classrooms and away from direct contact with students. The expanded administrative role of principals, driven by the need to manage adults and larger facilities, took its roots from Taylor's (1911) scientific management methodology and dominated early and mid-20th-century conceptualizations of the principal's role. Cuban (1988) argued that Taylor's *managerial imperative* pulled principals away from observing classrooms and into supervisory roles.

When the United States' National Education Association created the departments for elementary and secondary school principals in the 1920s, the principalship came to be regarded as an official position and as a profession (Beck & Murphy, 1993). From the 1920s through the 1960s, the principalship morphed into a professional management position requiring specialized training and, increasingly, certification. However, dramatic events in the 1960s spawned a new role for school leaders. These events, including Sputnik, Brown v. Board of Education, the larger Civil Rights movement, the enactment of the Individuals with Disabilities Education Act (IDEA), and the proliferation of educational and administrative research pushed the principalship to take on new responsibilities (Beck & Murphy, 1993). The increasing role of federal government programs in the 1960s and 1970s to support different student populations meant that

compliance and staff development dominated what little time principals had to develop instructional programs (Hallinger, 1992). Principals were also responsible for managing racial and special education equity, college preparation, bilingual education, and remediation. As suburbs sprang up across the world, principals also had to operate with changing school populations (Hallinger, 1992).

The foundational research on the changing nature of principal work-life, conducted in the 1960s and 1970s, emphasized both the frenetic pace of principal work and the often-overwhelming managerial responsibilities of school leaders. Wolcott's (1973) ethnographic study of one principal's time in *The Man in the Principal's Office* set the stage for further investigation into the complex role of principals. Wolcott's (1973) granular investigation of Ed Bell, a typical suburban principal, uncovered the barrage of problems and quick fixes, interruptions and solo demands that characterized his daily life. Wolcott tracked the daily stress of the principalship which he attributed to the external and internal pressures of the job. The work popularized the image of principals as lone-rangers, who work alone to keep schools operational, and as "fire-fighters," working to extinguish fires throughout the day (Weick, 1996). Indeed, Martin and Willower (1981) argued that the brevity and fragmentation of principals' managerial decisions, most lasting just four minutes, increased principal strain. These studies drove further research into the evolving nature of principal work life.

The instructional leadership construct, which emerged out of the *A Nation at Risk* report and the effective school research of the 1980s, wanted principals to depart from seeing their work primarily as administrators and compliance officers (Cuban, 1988; Edmonds, 1979; Marks & Printy, 2003). Attempting to contest the loosely-coupled nature of schools and classrooms, the instructional leadership literature conceptualized the principal as the primary supervisor of

classroom teaching and student academic progress (Hallinger & Murphy, 1987). Murphy (1990) identified four types of activities expected of principals as instructional leaders in effective schools: (a) the development of the school's mission, (b) coordinating, monitoring, and evaluating curriculum, instruction and assessment, (c) promoting the climate for learning, and (d) creating a supportive working environment. These early ethnographic and observational portraits of principals laid the groundwork for future study of how the ever-expanding scope of principal work affects principal job satisfaction.

The landscape of education shifted at the turn-of-the-century, marking a break from the push for instructional leadership in the 1980s. Landmark legislation, notably the No Child Left Behind Act (NCLB) of 2001, was intended to significantly raise student achievement, especially in areas of high poverty. NCLB's bipartisan support signaled the ascendency of accountability as a newfound policy paradigm for reforming U.S. schools (Mehta, 2013), though international versions of these accountability practices quickly took hold in other countries (Sahlberg, 2016). Under NCLB, each state was required to set standards for learning, develop assessments, and report proficiency for student performance under specific standards through high stakes testing (Au, 2007). Cohen and Mehta (2017) noted that NCLB and other standards-based reforms aimed to influence the school environment, classroom instruction, and the school administration. This represented a break with earlier system-wide reform efforts that sought change primarily through single dimensions of school structures, such as curriculum or staffing. School leaders were expected to supervise the implementation of new standards benchmarks to lead all students to proficiency by 2014. These reforms assumed that encasing school systems in an outer system of standards, assessments, accountability, and help with school improvement would produce a change in the schools' internal system of teaching (Mehta, 2013).

This overhaul of the policy environment, from an era previously focused on compliance to one emphasizing accountability and student performance on standardized tests was not isolated to the United States. From 2001 onwards, efforts such as the Academies Act of 2010, the National Assessment Program Literacy and Numeracy in Australia and Education for All by United Nations Educational, Scientific and Cultural Organization (UNESCO), sought to introduce whole-system reforms (Sahlberg, 2016). According to Sahlberg (2016), international reform movements were also spurred by the proliferation of the Program for International Student Assessment (PISA), which shined a spotlight on poorer performing countries and jumpstarted national educational reform efforts (most notably in Chile). These exported reforms included increased competition and school choice, standardization and increased emphasis on core subjects, and test-based accountability. An Organization for Economic Co-operation and Development (OECD) study found that almost all 65 countries or economies included in PISA testing changed their assessment and curricula to better align with PISA competencies. These changes came after so-called PISA shocks, poor press around country-wide results, and forced governments to take public measures to reform education (Breakspear, 2012). These neoliberal reforms also included corporatization of education, with schools and central offices expected to run as businesses. This expectation led to the adoption of performance-based pay, firing of poor performing staff, data-driven evaluations, evidence-based decisions, and transparency of results (Sahlberg, 2016). This Global Educational Reform Movement (GERM) has spread across many countries, directly impacting the demands on principals (Sahlberg, 2016).

In the wake of two decades of reform efforts, the responsibilities of school leaders have extended even beyond their duties as both administrators and instructional leaders (Spillane & Hunt, 2010). While principals have always managed a wide variety of responsibilities while

making time for unpredictable events, social interactions, and fragmented tasks, a body of research has documented the increased complexity of the job since the year 2000 because of the reform efforts associated with GERM (Crow, 2006; Hallinger, 2018; Leithwood et al., 2004, 2010; Marks & Nance, 2007; Supovitz & Poglinco, 2001). Principals in the 21st century must meet the demands of poverty, immigration, and fewer resources from public sector funding (Cooper, 2009; Diem et al., 2016; Miller & Martin, 2015; Welton et al., 2015). Transparency has allowed parents, taxpayers, and politicians to single-out principals for poor performance (Hallinger, 2018; Spillane & Hunt, 2010). Reform and accountability efforts have placed pressures on principals to extend their capacity to support data management, community outreach, and central office reform efforts (Grissom et al., 2015; O'Donnell & White, 2005; Spillane & Hunt, 2010; Supovitz et al., 2010).

Contemporary studies indicate how expansive the role of the principal has become and the struggle to contain these roles in the empirical study of school leadership. Three large-scale U.S. Institute for Educational Sciences (IES) funded studies examined separate aspects of principal work and each study resulted in a number of publications that captured the phenomena. A study of principals in Miami coded 43 distinct principal tasks, from using data to inform instruction to counseling staff (Grissom et al., 2013; Horng et al., 2010). A number of these leadership responsibilities would not have existed twenty years ago. Similarly, Camburn, Spillane, and Sebastian (2010), in a study of urban principals, attempted to reduce principal responsibilities to nine domains, including (a) building operations, (b) finances, (c) community or parent relations, (d) school district functions, (e) student affairs, (f) personnel issues, (g) planning and setting goals, (h) instructional leadership, (i) professional growth, and (j) other. Each of these domains, however, contains a multitude of tasks. Many of these tasks similarly

acknowledge the demands of the modern principalship, such as grant writing or digital communication. Finally, Mayger and Hochbein (2017) found that the *other* category within these studies needed further compartmentalization and suggested 14 additional tasks that better capture the way modern principals interact with a larger group of stakeholders. For instance, Mayger and Hochbein (2017) documented how principals networked with representatives of Wells Fargo Bank to discuss financial literacy, met with a probation officer regarding a former student, and liaised with former board members about an upcoming teacher contract. These studies present the extent to which even empirical research has been forced to operationalize the expanding role of principals.

This review of the expanding role of the principalship has presented how the once modest role of the principal as a headteacher has morphed into a higher-stakes, higher-pressure position. The load on what Copland (2001) called the super-principal (principals tasked with managerial, moral, data, instructional, and transformational leadership) has only increased. Political, social, and cultural changes in both school systems and society have forced principals in 2020 to wear many hats that would have been unheard of to a principal in the 1970s, let alone in the1920s. Given this environment, principal job satisfaction is highly related to the ability of school leaders to navigate the complexities of their jobs. Now that the broader features of schools as workplaces in which principals operate and the historical dimensions of principal work have been considered, an examination of the principalship across the globe will follow.

International Variations in Principals' Work

The work of principals is shaped directly by the institutional contexts in which they operate. These institutional contexts include the structures and goals, as well as rules and regulations, that govern the school within its local educational agency and its broader educational

system (Hallinger & Leithwood, 1996). These differences might be further categorized by the degree of educational centralization, the presence of unions, curricular mandates, and other political forces. Cultural institutions and norms further differentiate different work values (Hallinger & Bryant, 2013; Hofstede, 1984), complicating attempts to conduct cross-country comparisons.

Juxtaposing two principalships helps illuminate these disparities. As Savage and O'Connor (2015) noted in a study comparing school systems in Australia and the United States, a principal of a rural Northwestern Australian school in Darwin will operate in a vastly different role than a principal in post-industrial mid-United States Detroit. The two principals will experience nearly every aspect of their day-to-day work differently. Their curricula, hours, human capital, accountability policies, salaries, and relationships with staff will diverge. The Australian nationalized curriculum will guide our Darwin principal's decisions around teaching, while our Detroit principal will have relative freedom within Detroit's decentralized curricular policies (Jacob et al., 2017; Savage & O'Connor, 2015). These choices are informed by national decisions. Every Australian state agreed to a national curriculum with key competencies while education in the United States has always been a "local affair" (Henig, 2013, p. 5) with vociferous objections to even attempt to nationalize competencies and standards. The Darwin principal will receive much of the school's funding from federal agencies, while the Detroit principal will receive a majority of the school's funding originating from state and local property taxes. The principal in Detroit may interact with the Bill and Melinda Gates Foundation or textbook giant Houghton-Mifflin Inc., while the principal in Darwin may have only limited contact with non-governmental organizations (Savage & O'Connor, 2015). The Darwin principal will need to support indigenous populations, including Aboriginal and Torres Strait Islanders

while the Detroit principal will need to support African American and Hispanic populations. These examples only scratch the surface in capturing international variation in principal work.

These differences can be attributed, in part, to larger historical forces. McAdams (1993) argued that colonialism shaped the role of the principal across international contexts. The British and Western European principal, the headteacher, was seen as a veteran teacher tasked with indirectly monitoring teacher and student progress. This model influenced countries under their colonial rule, such as India or Malaysia. The long reach of the British empire has likewise shaped commonwealth nations' educational leadership structures, policies, and customs (Moorosi & Bush, 2011). These include Australia, New Zealand, Canada, and Ireland. The U.S. principal's more formal managerial, supervisory, and disciplinary role helped influence, for instance, a period of expansion in the role of Japanese principals during the United States' post-WWII occupation (McAdams, 1993). Researchers have also examined how differing values placed on authority, collectivism, and social institutions in so-called Eastern versus Western societies shaped the role of school leaders (Hallinger & Bryant, 2013; Johnson, Miller, Jacobson, & Wong, 2008). For instance, distributed leadership, which emphasizes collaboration and democratic governance, may be culturally alien to some Eastern societies which discourage the expression of opposition in the workplace (Collard, 2007).

Any cross-cultural study, however, is inherently limited and risky. For example, even the language used in the previous paragraph may be problematic. Researchers may slip into describing cultures in essentialist or generalist terms, collapsing in-group heterogeneity into trait theories (Collard, 2007; Ladson-Billings, 2003). Cultural and contextual differences between the United Kingdom, France, and Germany may be lost in simply describing them as Western. There may be more variation within than between the Eastern countries of Singapore, China, and Japan

(Dimmock & Walker, 2000). Researchers also run the risk of describing cultures as static, when globalization and technological integration have begun to upend traditional cultural assumptions (Collard, 2007). Western-trained scholars may bring assumptions and beliefs about other cultures and other normative leadership frameworks into their work, biasing conclusions and perpetuating forms of colonialism (Cravens & Hallinger, 2012; Ladson-Billings, 2003). Furthermore, language biases may prevent researchers from accessing critical studies that help paint more a nuanced and contextualized picture of school leadership (Collard, 2007; Dimmock & Walker, 2000). For these reasons, Cravens and Hallinger (2012) cautioned that researchers need to interrogate their cultural assumptions before and during their study of the principalship in international contexts.

Despite these limitations, Dimmock and Walker (2000) called attention to the need to develop comparative educational models to examine how variation in educational contexts informs school leadership decision-making. They first noted a dearth of international scholarship in educational leadership, especially in comparison to international managerial studies or international studies of teachers. The field may develop a myopic, mono-cultural view of leadership without cross-country studies that explores diverse contexts. If educational leadership research is to remain relevant to practitioners it must begin to include research that goes beyond single country perspectives, particularly the United States. The rise of globalized policies and practices, especially in the reform era and in the era of supranational organizations such as the Arab League and the European Union (Normore, 2010; Sahlberg, 2016), have created a global educational marketplace. Nations are increasingly looking internationally to develop models of education leadership practice (Dimmock & Walker, 2000). There is a need for researchers to catch up to these realities on the ground by examining similarities and differences in global

contexts. Finally, by expanding the scope of the research context, researchers can test to see whether local findings can be replicated internationally. This is particularly important in the field of principal job satisfaction, as the literature has so far not produced definitive findings.

Since Dimmock and Walker's (2000) call for a greater international study of principals, a growing literature has examined international variation in the principalship. Studies have examined best-practices across countries (Day & Leithwood, 2007; Leithwood & Riehl, 2003) and how local cultural practices shape leadership (Brooks & Normore, 2010; Normore, 2010). Researchers have also looked at how globalization and development have changed leadership (Brooks & Normore, 2010; Oplatka, 2004). Finally, several case studies have compared aspects of the principalship in one or more countries (Day & Leithwood, 2007; Hallinger & Lee, 2013). However, there are a limited number of studies examining job satisfaction from an international comparative perspective (Liu & Bellibas, 2018; Sparkes & McIntire, 1988), though a large number of single-country studies have been conducted (see Table 1).

This study examines international variation in school leadership job satisfaction within the canonical comparative research framework suggested by Adler (1983). Scholars use Adler's comparative management research framework to compare organizational management in and across many foreign countries to identify emergent universal themes. By attempting to define patterns that emerge from all the countries studied, comparative researchers find similarities, which are labeled as universal findings and differences, labeled as cultural or contextual differences. In adopting this framework, this study rejects an extreme culture-specific view that cultures are too unique to be studied cross-comparatively. It also rejects an extreme universal culture-general approach to prevent overlooking important cultural aspects. Implementing this

framework requires an acceptance that there are both culture-specific aspects to leadership and culture-general aspects of leadership.

Using this comparative research framework to examine international variation in principal job satisfaction has inherent tradeoffs (Adler, 1983; Cavusgil & Das, 1997; Eglene & Dawes, 2006). First, given the ways the TALIS surveys were conducted, national boundaries are implicitly assumed to be culturally distinct units. While this does not allow decomposition of cultural variation within each country, it does allow an examination of the relationship between country-level policies and job satisfaction. Second, Adler (1983) strongly advised against treating culture as a statistical residual or unexplained variable, as doing so is methodologically unsound and is unhelpful in answering comparative research questions. However, given the limited variables within the TALIS survey about culture, there are a limited number of independent variables that can be used to capture cultural variation. This limitation and proposed variables are discussed in Chapter 3. Third, any analysis of results must be mindful of the ecological fallacy, the confusion of country-level correlations with individual-level correlations (Adler, 1983). Observed phenomena among principals in one country may not hold for individual principals in that country. To help account for country-level effects and principal-level effects, multivariate statistical analysis examined compositional effects and used centering within-clustering (CWC). These statistical techniques are also discussed in Chapter 3. Finally, any analysis or conclusion based on comparative research must be sensitive to essentializing, generalizing, and other cross-cultural issues noted above.

It is for these reasons that Eglene and Dawes (2006) warned that conducting cross-cultural organizational research is complex and error-prone. Careful attention must be paid to research design, methodology, and analysis (Cavusgil & Das, 1997). Through multiple iterations

of the TALIS survey, OECD researchers have refined each stage of the research process (design, execution, and preliminary analysis) to allow for in-depth comparative analysis. TALIS meets the pre-requisites noted by Adler (1983). Because of TALIS's documented procedures around instrumentalizing constructs, the key variables in this study, such as satisfaction, distributed leadership, and autonomy (as defined in the survey instruments) have conceptual equivalence across cultures. By analyzing results with an eye towards the limitations of the comparative framework and the pitfalls of cross-cultural research, this study can also fill an important research gap.

This section examined international variation in principal work. Country-level differences in centrality, autonomy, responsibility, pay, and many other variables have suggested that context matters in principal work. This section also scrutinized the assumptions and problems of conducting international comparative work. Despite some limitations, there is a need to fill a gap in understanding how principal job satisfaction varies across countries. How these and other embedded contexts drive job satisfaction requires an understanding of theory. Job satisfaction theories provide this framework.

Theoretical Framework

Defining Job Satisfaction

Hoppock (1935), one of the first empirical researchers of workplace satisfaction, defined job satisfaction as the psychological, physiological, and environmental circumstances which cause a person to say "I am satisfied with my job" (p. 343). Locke (1969) defined job satisfaction as the "pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating one's values" (p. 316). He moved closer to operationalizing the construct by theorizing that job satisfaction and dissatisfaction are relational functions between an employee's

wants from their job and what the employee perceives as what the job can offer. Despite dozens of definitions of job satisfaction by many different scholars since Hoppock's groundbreaking work (Spector, 1997), there are a few consistent elements that comprise this discourse. These foundational definitions indicate that job satisfaction is a construct that incorporates individual personalities, needs, values, and motives within the context of workplace characteristics. I propose a simplified definition of job satisfaction quality that reflects each of these elements: Job satisfaction is a set of beliefs about how pleased a person is with their job. In this view, job satisfaction is not a single specific characteristic of a job but reflects the set of relationships between personal values, the environments in which they work, the expectations they have for the job, and the outcomes of the job.

Theory building in the field of work motivation and job satisfaction features many overlapping models that attempt to link these aforementioned relationships. All these work motivation theories have limitations and have been critiqued by researchers and theorists. Some theories that were popular in the years after they were published, such as Maslow's Hierarchy of Needs (1954), have not held up to empirical scrutiny. A historical study of job satisfaction theory will clarify this multi-dimensional construct.

This review will focus on the evolution of four job satisfaction factor theories that are prevalent within organizational and educational literature and will briefly discuss how these theories have been applied to studies of teachers and principals. Several theories, such as Locke's (1969) affect theory, discrepancy theory, or dispositional theories, have received less attention and, in the interest of space, lie beyond this review. Since researchers have published thousands of peer-reviewed studies of general job satisfaction, this review will favor meta-analyses and, when necessary, refer to foundational studies in the field. Furthermore, references to educational

studies of job satisfaction within this discussion of theories are used to illustrate the contours of the theoretical concepts and not as comprehensive reviews of the empirical work associated with these theories. Future sections will scrutinize the methods, measures, and results of studies of educator job satisfaction.

Job Satisfaction Theories

The empirical study of job satisfaction can be traced to the oft-cited Hawthorne observational studies at the Western Electric Company of the early 1930s (Mayo, 1933). While the experiments concentrated on the role of supervision and increasing productivity, the researchers of the study suggested that understanding the socio-psychological aspects of human motivation was critical in understanding worker productivity. The studies also argued that the structure and environment of work changed how workers felt about the work itself. The Hawthorne experiment offered the first pieces of evidence linking job supports and job satisfaction. Hoppock (1935) operationalized these concepts into the first surveys and scales to measure job satisfaction. Using Likert scales, Hoppock was the first to place job satisfaction as a dependent variable. He examined environmental factors, such as job salary, hours, and job tasks, along with personality factors, such as a sense of status or achievement, as independent variables.

These questions would be taken up by Maslow's hierarchy of needs theory (1943)—the most popular of all motivational theories. Maslow's theory suggested that workers need their basic needs met, such as a need for safety and belonging, before higher-order needs, such as esteem, can be met. Once each need is satisfied it no longer acts as a motivator. Maslow's work, while influential, has gained little support in empirical literature even half a century after its publication (Spector, 1997). Nevertheless, scholars influenced by Maslow attempted to

understand the relationships between job satisfaction and *personal attributes* (education and personality), *job content* (what people do), *job context* (the job's environment), *organizational attributes* (leadership, policies), and other components (Gruneberg, 1979). The interaction between these elements indicated that job satisfaction is a multidimensional phenomenon.

Herzberg, Snyderman, and Mausner (1966) refined Maslow's notions to fit workplace environments. Herzberg et al.'s (1966) motivation-hygiene theory, also known as the two-factor theory, suggested that workers find job satisfaction from aspects of the work itself. This theory divides satisfaction into two components: motivators (satisfier factors) and dissatisfiers (hygiene factors). Hertzberg et al. (1966) argued that good patient hygiene removes health hazards but does not cure disease or create good health outcomes. So too, while adequate working conditions can prevent dissatisfaction and attrition, they do not create added enthusiasm for the job at hand. A worker can, in this theory, have no job dissatisfaction as well as no job satisfaction.

Dissatisfaction is rooted in the absence of hygiene factors. These extrinsic hygiene factors include (a) policy and administration, (b) technical supervision, (c) interpersonal relations with supervisor, peers, and subordinates, (d) salary, (e) job security, (f) personal life, (g) work conditions, and (h) status (Herzberg et al., 1966). Employees who have satisfied all of these hygiene factors, according to motivation-hygiene theory, will not necessarily show satisfaction. Rather, these employees will show an absence of dissatisfaction—a neutral state (Miner, 2005). To move workers into a state of satisfaction requires motivating factors to encourage employees to work harder and to feel a stronger commitment to their work. These intrinsic factors are present in the work itself: (a) achievement, (b) recognition, (c) advancement, (d) the work itself, (e) opportunities for personal growth, and (f) added responsibility (Herzberg et al., 1966).

The motivating factors identified by Herzberg et al. (1966) contribute to job satisfaction because they theorized these factors ultimately fulfill the needs classified by Maslow (1943). For higher performing individuals, workplaces are, ultimately, places for self-actualization. These individuals seek intrinsic motivators. Low performing individuals, according to Hertzberg et al., will be motivated by extrinsic factors, such as salary, security, and working conditions. For the majority of workers, these extrinsic motivators will be a strong predictor of their job dissatisfaction.

Dozens of initial studies in organizational psychology confirmed the theorized relationships between various factors within the motivation-hygiene theory (Miner, 2005). Studies of job satisfaction among teachers and school leaders in the 1970s and 1980s also relied on and advanced this theory (Frataccia & Hennington, 1982; Gaziel, 1986; Kaufman, 1984; Schmidt, 1976). These educational studies used this theory because of its dual focus on structural factors and job characteristic factors. However, a theory about the idiosyncrasies of schools as workplaces as conceptualized by Waller (1961) and Lortie (1975) suggested that educators are motivated by a larger range of extrinsic and intrinsic factors, such as the egoistical rewards of education identified by the former and the psychic rewards of education emphasized by the latter. The simple variables within the traditional motivation-hygiene theory were seen as inadequate. Therefore, a range of educator-specific hygiene variables was developed including relationships with parents and other teachers (Gaziel, 1986), school-policies (Frataccia & Hennington, 1982), and school-specific working condition variables (such as school size or student socioeconomic status [SES]; Schmidt, 1976). These early studies indicated that responsibility for education-related job (dis)satisfaction rests on district policies, school principals, and teachers. Therefore, districts and leaders who wish to increase educator job

satisfaction should pay attention to higher-order needs, such as autonomy in the classroom or enjoyment in teaching and must at the same time be attentive to educator pay and working conditions.

However, a more critical wave of studies in organizational psychology suggested several weaknesses in the motivation-hygiene theory (Miner, 2005). These critiques were predicated on both theory and empirical evidence. First, some theorists critiqued the Hertzberg et al.'s (1966) approach to individual-specific job satisfaction factors. For instance, for some individuals, salary will be a stronger motivator than opportunities for growth. Second, theorists argued that employees often link their workplace satisfaction with their achievements and blame their bosses or policies on their dissatisfaction. The motivation-hygiene theory does not take this bias into account. Third, researchers found that the presence of hygiene factors did predict job satisfaction or job commitments, in contradiction to the theory (Miner, 2005). Finally, researchers found that higher-order intrinsic motivators were found to either be poor predictors of overall job satisfaction or an over-simplification of the relationship between employers to their work (Miner, 2005).

In response to these critiques, Karasek (1979) developed the job demand-control (JDC) model of job satisfaction, which focuses on two groups of factors: job demands and job control. Karasek argued that job demands, stressors such as time pressures, demands from superiors, or poor working conditions, reduces job satisfaction. In contrast, job control increases job satisfaction because workers who are tasked with non-repetitive high-skills work ("skill discretion") and given their autonomy ("decision authority") have greater ownership of their work (Karasek, 1979, p. 285). Karasek suggested that workplace factors, such as status, might factor into both job demands and job control depending on each individual. Furthermore,

different workplaces will generate varying levels of job demands and job control. Karasek's model suggested four quadrants of workplaces: (a) passive, (b) low-strain, (c) active, and (d) high-strain. Passive jobs, such as warehouse work, have low job demands and low authority and autonomy, leading to high turnover and unhappiness. Low-strain jobs have low demand but high authority and autonomy. Active jobs require both high demands and high autonomy, an optimal balance that allows workers to feel a sense of ownership and pride in the work. Finally, high-strain jobs feature high demands and low levels of authority and autonomy, resulting in psychological and physical burnout.

A cadre of scholars on schools as workplaces shared the fundamental ideas behind Karasek's (1979) JDC model, especially for the importance it placed on job authority and autonomy. As early as the 1960s, education scholars took note of the fact that teachers were geographically isolated from each other and the administration inside of their classrooms and had to make decisions autonomously (Bidwell, 1965). This idea was later distilled into the egg-crate compartmentalization model of schools, referring to the architectural and managerial phenomenon of sequestering teachers into boxed individual classrooms (Tyack, 1974). The theory of loose coupling also emerged from these early observations, a term that describes how organizational systems are weakly dependent and responsive to other parts within the same system (Weick, 1982). Weick noted that principals do not carefully inspect instruction just as district administrators do not carefully inspect principals. Lortie (1975) pointed to the high degree of autonomy that teachers are afforded, as symbolized by the closed door which they can put between themselves and the school's administration. Similarly, the distance between district officials and school leaders affords principals relative independence over major decisions inside schools.

To respond to these organizational features of schools, teacher and principal job satisfaction studies in the 1980s included autonomy and strain variables as theorized by the JDC model. Fletcher and Payne (1982) found high levels of stress among British teachers but also found that these teachers wanted more responsibility, even if their salary did not increase commensurately. They found that job strain was directly associated with job satisfaction. Fansher and Buxton (1984), in a study of 266 female principals in the United States, found that bureaucratic issues related to lack of control of teachers and lack of interest by district administrators far outweighed personal or family-related problems as sources of job dissatisfaction. A study of 164 assistant principals in the United States echoed these findings on the importance of authority and autonomy in predicting job satisfaction (Garawski, 1978). These studies point to the principalship as either an active workplace, one with high autonomy and high demands, or, more often, as a high-strain workplace in districts with heavy-handed regulations and policies.

Given the centrality of social supports, or rather, a lack of social supports in traditional workplaces, the Job-Demand-Control-Support (JDCS) model was developed as an addendum to the JDC model. It was quickly adopted into the field throughout the 1990s to better explain the dimensions of job satisfaction. In an ideal JDCS model of a satisfied worker, individual employees are expected to meet the demands tailored to their capacities within an appropriate level of autonomy and with adequate social support. A worker tasked with high demands, low job autonomy, and low social support will experience high dissatisfaction, stress, and attrition. Johnson and Hall (1988), in an oft-cited study of Swedish workers, found that workplace support and cooperation moderated the effect of job strain on job satisfaction. A subsequent review of 63 studies in organizational psychology throughout the 1980s and 1990s showed strong evidence

that working in a high-strain job with few jobs supports associated with lower general psychological well-being, lower job satisfaction, higher rates of burnout, and more work-related psychological stress (Van der Doef & Maes, 1999).

The JDCS model has also been applied to investigate the relationship between working conditions and job satisfaction of teachers in various settings, though no peer-reviewed studies have been conducted on principals using this theoretical model. Job condition, stress coping mechanisms, and job satisfaction and health-related outcome variables were collected from 561 German teachers to examine the relationship between demands, control, and support (Sann, 2003). Saan found that physical and emotional exertion was a good predictor of job satisfaction though social support did not predict job satisfaction. However, a larger study of 2,796 teachers across 13 European countries collected similar variables and found that social support was a strong predictor of teacher job satisfaction (Verhoeven et al., 2003). Verhoeven et al. also found that physical exertion and total work hours were also strong predictors of dissatisfaction. A study of 2,569 Norwegian teachers also found that feelings of belonging and emotional exhaustion mediate the effect of school context on job satisfaction (Federici & Skaalvik, 2012). Time pressures and student discipline problems were predictive of teacher emotional exhaustion, which in turn was predictive of job satisfaction. Federici and Skallvik's findings that supervisory, collegial, and parent relationships were predictive of senses of belonging support the theoretical underpinnings of the JDCS model.

Nearly a decade after Johnson and Hall's (1988) work on the role of social support in workplace job satisfaction, Siegrist (1996) developed a model that emphasized the rewards of work, rather than just the structure of work. While Siegrist originally introduced the model to help predict and explain cardiovascular health outcomes as related to work stress, the model has

been used to examine what happens when employees overexert themselves. Siegrist's effort-reward imbalance (ERI) presented an imbalance between an employee's effort and reward will lead to stress, poor job satisfaction, and eventually to poor somatic outcomes. Borrowing language from Herzberg et al. (1966), Siegrist (1996) referred to extrinsic job demands, such as working conditions or time pressure, and both extrinsic benefits and rewards that meet those demands. These benefits include career advancement, added salary, or other fringe benefits. Intrinsic rewards include feelings of satisfaction and responsibility. While the ERI model shares many aspects with the JDCS model, Siegrist emphasized several aspects that are particularly relevant in understanding teachers and principals.

Siegrist (1996) argued that employees who spend too much effort on high demand, low reward activities will feel a sense of overcommitment and strain. This overcommitment is directly linked to lower job satisfaction and higher levels of burnout (Bakker et al., 2005). A review of papers published between 1986 and 2003 found ERI has gained considerable empirical support, with overcommitment linked to higher levels of emotional exhaustion and job dissatisfaction, burnout, and eventually to elevated risk of depression, substance abuse, and even heart disease (Van Vegchel et al., 2005). For teachers and principals in high strain school environments, overcommitment is common, and so are adverse work and health outcomes. Studies have linked chronic school-related stress to dampened immune defense among teachers (Bellingrath et al., 2010), depression (Lehr et al., 2009), and even atherosclerosis (a disease characterized by a buildup of fatty plaque on the inner walls of the arteries; Von Känel, Bellingrath, & Kudielka, 2009). These studies also link teacher overcommitment with the same adverse outcomes of other overcommitted workers as those identified by Van Vegchel et al. (2005). Despite a growing body of evidence using the ERI model in the study of teachers, no

study to date has used ERI in the study of principals. Despite this lack of evidence, ERI models have drawn attention to the importance of health-related outcomes of job dissatisfaction. When employees experience sustained high-strain environments, not only are they at risk of poorer performance or attrition, but they are also at risk for poor somatic outcomes.

The JDC, JDCS, and ERI models have helped scholars taxonomize the relationship between job characteristics on both work-related and health-related outcomes. Several concepts within these models help to contextualize the dimensions of principal work: overcommitment, high-demand workplaces, autonomy, support, and higher-order needs. However, scholars have also criticized these models. First, some researchers find that these models are too restrictive to a limited set of predictor variables that are thought to predict dissatisfaction and that these predictors may not be relevant for different white and blue-collar jobs (Van Vegchel et al., 2005). Some factors that may be important in some jobs, continuous training for high-skilled technicians, for instance, are not captured in these models (Dollard et al., 2007). Second, the majority of studies of these models focus on the negative outcomes of the aforementioned work variables, such as burnout and poor health (Bakker & Demerouti, 2007). Few studies focused on positive outcomes for workplaces with active or low-strain environments. Third, these models do not necessarily capture gender, age, and cultural orientations towards workplace environments (Grönlund, 2007). Fourth, these models have been critiqued for their static view of workplaces and the difficulty in applying these models to modern, dynamic workplaces (De Jonge & Kompier, 1997). Finally, these models do not take into account the emotional demands of work that are more prevalent among some occupations, such as teachers and principals, but nearly absent in others, such as logistics workers (Bakker et al., 2005). While researchers have not

shelved these models entirely, many have adopted a more flexible model that responds to these critiques.

The job-demands-resources model (JDR), developed at the turn of the 21st century, reworks the assumptions and relationships of the JDC, JDCS, and ERI models to meet these critiques (Bakker & Demerouti, 2007). Bakker and Demerouti's JDR model divides workplace risk factors into two broad categories: job demands and job resources. Job demands comprise the psychological, physical, social, and organizational aspects of a job that require both cognitive and emotional effort. These demands have both psychological and physiological costs. Job resources are the psychological, physical, social, and organizational aspects of the job that stimulate growth, reduce the psychological and physiological costs of those job demands, and help to achieve work goals. Job resources also increase job satisfaction and reduce burnout and attrition. The Bakker and Demerouti (2007) JDR model is depicted in Figure 1.

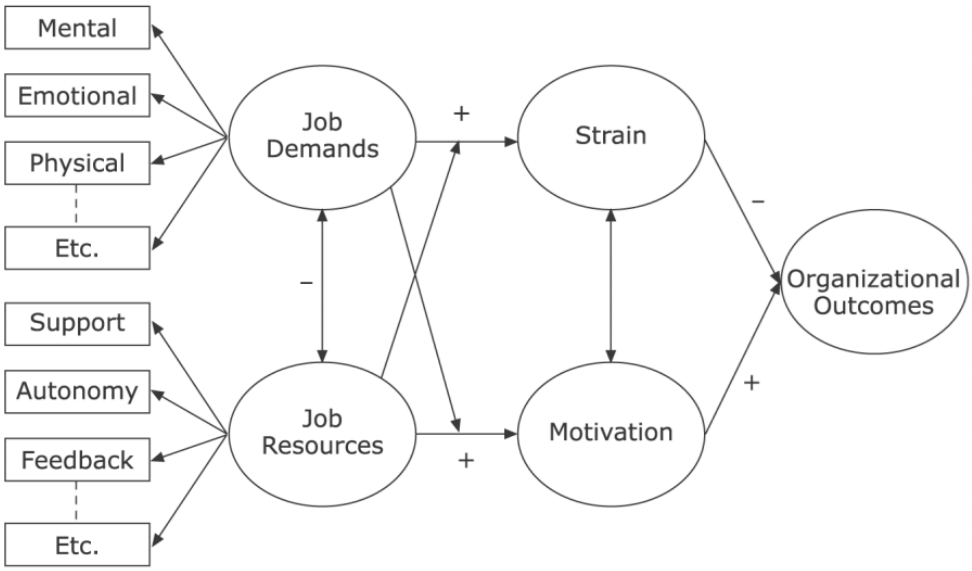


Figure 1. Bakker and Demerouti's (2007) Job Demands-Resources Model.

Bakker and Demerouti (2007) suggested that two psychological processes play a role in job strain and job motivation. In the *motivational potential* process, job resources stimulate work satisfaction, lower cynicism, and increase performance. This process may be intrinsic because it fosters an employee's growth and development, or extrinsic because it helps the employee accomplish work goals. In the *health impairment* process, chronic job demands exhaust employee's physical and mental resources leading to dissatisfaction. This results in depleted energy, poorer performance, and health impairments. Employees might respond to these demands by narrowing their job tasks and attention, sacrificing energy and time from home life or making risky decisions or tradeoffs at work (such as cutting corners). The long-term effects of these strategies are an even greater strain and higher physiological and psychological costs.

This model pays particular attention to interactions between these demands and resources. Bakker and Demerouti (2007) proposed that job resources buffer the impact of job demands on job strain and burnout. Workers under demanding conditions who have the resources to deal with those demands will experience fewer psychological and physiological costs. Bakker and Demerouti also suggested that several sources of job resources can play this buffering role. For instance, supervisors who communicate effectively with employees about the reasons why demands are high and how they can support employees during high demand can palliate employee health impairment. These employees understand the reasons for strain and have intrinsic motivational potential to improve their work. Since every job has its resources and its specific risk factors associated with strain and stress, these factors can change depending on job context. While the JDC model suggests that only autonomy buffers stress, JDR suggests that multiple types of demands and resources interact to reduce or increase stress, especially when demands are high.

Bakker and Demerouti (2007), citing conservation of resource theory (Hobfoll & Shirom, 2000), suggested that stress increases or decreases relative to available resources. Employees with larger pools of resources will be less susceptible to the loss of resources. Those who have resources not only cope better than those who do not but additional resources increase the benefits employees enjoy from their other resources, the so-called "gain spiral" (Hobfoll & Shirom, 2000, p. 65). On the flip side, employees who do not have access to strong pools of resources are more vulnerable to a so-called "loss spiral" (Hobfoll & Shirom, 2000, p. 71). Those who lack resources may be unable to utilize their other benefits and have no resources to help absorb the impact of workplace strain. Furthermore, while an abundance of resources can have a modest effect on motivational potential, this abundance is most beneficial in high demand jobs (Bakker & Demerouti, 2007).

The JDR model also hypothesizes moderating effects between demands and resources. The so-called buffer hypothesis within the JDR model builds upon Karasek's (1979) JDC model, suggesting that a combination of low job control and high job demands is the most significant predictor of job strain. Karasek theorized that job control can moderate the adverse effects of high demands on job satisfaction. JDR's buffer hypothesis similarly suggests that job resources (e.g., coaching, time, autonomy, or supervision) buffer the adverse effects of job demands (e.g., working climate, overcommitment, emotional demands) on indicators of burnout (e.g., overcommitment, exhaustion, cynicism, turnover indicators; Bakker et al., 2005).

Contemporary researchers have found ample support for the JDR model. A meta-analysis of 35 heath and community services study found that high work demands and low resources were associated with poor health and employment outcomes (Dollard et al., 2007). High demands included extended work hours, social-emotional demands, and pressure from

supervisors. Low resources included inconsistent or non-existent supervisor feedback and support, low autonomy, and few workplace relationships. Observed employment outcomes included increased sick days and absences, reduced job satisfaction, and higher employee turnover.

The JDR model has also been applied to the educational sector, given the sector's reputation for high-demands (Montgomery & Rupp, 2005). Studies of 2,038 and 805 Finnish teachers, respectively, found that principal support, communication, school collegiality, and classroom autonomy mediated the effect of student misbehavior and disengagement on job satisfaction (Bakker et al., 2007; Hakanen et al., 2006). These resources also mediated the effect of high job demands on teacher self-reported health. A study of Spanish teachers found that job resources such as mutual support, autonomy, and school climate can mediate the effect of stress on burnout, work exhaustion, and cynicism (Prieto et al., 2008). In an attempt to examine more granular longitudinal data, an Italian study of the daily fluctuations in resource support and job demands of teachers using diaries and surveys found consistent results on the beneficial effects of social resources on individual job satisfaction (Simbula, 2010). The study's unique design demonstrated that changes in resources have short-term effects on feelings of engagement, job satisfaction, mental health, and mental exhaustion.

Only one study of principals has been conducted using the JDR theoretical model. An Italian study of 224 principals measured work demands, workaholism, work engagement, support resources, and self-efficacy and autonomy (Guglielmi et al., 2012). Guglielmi et al. likewise found that job demands mediated the relationship between workaholism and burnout. The researchers found that job resources also mediated the relationship between self-efficacy and work engagement and burnout. While this study used scales for measuring burnout, demands,

resources, and engagement that are common in the field, they did not tailor any questions to the particular demands of principals. For instance, they employ the Maslach burnout inventory with questions such as “I feel emotionally drained from my work” (Maslach et al., 1986). While using scales supports generalizability, without adapting questions to the context of principals’ work, researchers are unable to isolate areas of school climate and contexts that may contribute most to principal job dissatisfaction. Issues with central-office or regional supervision, policies, student discipline, teacher discipline, and parent issues cannot be isolated.

The Scope of Principal Job Satisfaction

The various theoretical models that have evolved in studying job satisfaction, JDC, JDCS, ERI, and JDR, have proven instrumental to researchers in organizing the varied and sometimes conflicting antecedents and outcomes of job satisfaction. These include various aspects of the job itself, such as autonomy, but also include mental and physical health. The theoretical literature also points to three areas that any study of job satisfaction must consider. First, theorists have suggested that work-related variables such as time at home, conflicts at home, and familial responsibilities interact with perceptions of fulfillment at work (Near et al., 1978). A meta-analysis of 178 peer-reviewed papers on family-work satisfaction and conflicts found that work stress spilled into family life in its effect on job satisfaction more than family stress crosses over into the work-life (Ford et al., 2007). An examination of principal job satisfaction should consider the role of the family.

Second, theorists have also suggested that while supervisors, such as principals, share many of the needs and aspirations of standard employees, such as teachers, supervisors have specific needs commiserate with their added responsibilities (Burke, 1988; Herzberg et al., 1957). Cooper and Marshall (1978) grouped the unique sources of supervisor stress into two

categories: internal factors and factors external to the organization. These sources include (a) relations with others (including supervisors, colleagues, and subordinates), (b) organizational structure and climate, (c) career development (promotion availability, job security), (d) defined role in the organization (conflict, ambiguity, responsibility), and (e) intrinsic factors (over or under-worked, physical working conditions, time pressure, autonomy). These contextual needs and strains should be also considered in examining principal job satisfaction.

Finally, researchers of educational administration have identified additional areas in which principal stress differs from teacher stress. Welch, Meideros, and Tate (1982) suggested that principal stress arises from (a) the loneliness inherent in leadership, (b) time and effort overload, and (c) organizational structures at the district level that prevented autonomy or jeopardized job security. Similarly, Borg and Riding (1993), in a study of principals in Malta, suggested that principal stress arises from (a) lack of support and need to resolve conflict, (b) inadequate resources, (c) workload, and (d) work conditions and responsibilities. Other researchers have identified the need to accomplish trivial administrative tasks, a lack of support, and ambiguous roles as sources of job dissatisfaction (Carr, 1994; Chaplain, 2001; Friedman, 2002; Knutton & Mycroft, 1986; Sarros, 1988; Savery & Detiuk, 1986; Torelli & Gmelch, 1992). While many supervisors suffer from high work overload, these foundational studies have suggested that principals must contend with unique job stressors: the emotional exhaustion of working with weak teachers, unruly students, and demanding parents, along with few areas of career advancement and few resources from district supervisors (Iannone, 1973). These needs should be taken into account in this empirical study.

As this section has presented, observational and laboratory studies of employee job satisfaction are widely published in organizational and industrial psychology. Since the 1970s,

researchers have also identified some of the antecedents and consequences of principal job satisfaction and dissatisfaction. This review has already touched on some of these factors such as perceived autonomy and self-efficacy or resources in the school. This review has also presented the consequences of dissatisfaction including reduced productivity and self-efficacy, lower job commitments, and higher turnover and burnout. The next section will systematically gather the available evidence on all antecedents and consequences of principal job satisfaction. The review will be organized by the JDR theory. The following section will also address how job satisfaction and related concepts have been measured within educational leadership literature.

Studies of Principal Job Satisfaction

While the aforementioned foundational theory of job satisfaction from the 1970s through the 1990s laid the groundwork in understanding the antecedents and effects of positive and negative principal job satisfaction, the contexts in which principals operate, as well as the roles they now inherit, have changed (Sahlberg, 2016). This review of qualitative and quantitative principal job satisfaction studies will, therefore, examine the association between these changing contexts and administrator job satisfaction. This section will outline the key findings of the research on principal job satisfaction.

Predictors of Principal Job Satisfaction

Researchers have conducted a substantial number of studies to identify factors that contribute to principal job satisfaction. Researchers have also piloted studies to examine the consequences of high and low levels of job satisfaction on burnout, turnover, and health effects. This section synthesizes this accumulated knowledge. These studies have sought to answer several questions related to job satisfaction. Some examine internal factors, such as motivation, life interest, and efficacy (Miskel et al., 1975, e.g., 1980). Other studies are interested in external

factors, such as pay, work hours, or bureaucracy (e.g., Mercer, 1993; Saiti & Fassoulis, 2012). Some studies are interested in school characteristics, such as location, grades served, or urbanicity (e.g., Derlin & Schneider, 1994; Fansher & Buxton, 1984). Still, other studies are interested in principal demographic factors, such as gender or marital status (Eckman, 2004; Hill, 1994; Trusty & Sergiovanni, 1966). Though the particular research questions varied in these studies, most of these studies uncovered multiple factors that contributed to job satisfaction. This section will parse out the research on principal job satisfaction and discuss the key findings. An in-depth discussion of the search review and method is included in Appendix B.

Scholars have studied the relationship between satisfaction and relationships (e.g., teachers, parents, students, central office staff), accountabilities and scope of responsibilities, and school characteristics (e.g., urbanicity, grade span, size, student composition). The literature indicates that these findings are inconsistent, with some contradictions that should be investigated further.

Social relationships. Researchers on social relationships between principals and other school stakeholders have developed theoretical understandings that point to the importance of rich networks for successful school climates and successful school leadership (Drago-Severson, 2012; Hanselman et al., 2016; Park & Ham, 2016; Riehl, 2000; Sebastian & Allensworth, 2012). Principals are dependent on these stakeholders to achieve their missions (Supovitz et al., 2010). Teachers form the conduit through which successful administration reaches the classrooms (Hallinger & Heck, 1996; Leithwood et al., 2010). Students are the ultimate but indirect beneficiaries of this leadership, though their relationship with school leaders helps to shape the vision and mission of the school (Krüger et al., 2007; Leithwood & Jantzi, 2008). Parents form an important resource to help bolster the school's mission and represent a constituency whose

feedback is critical in shaping the day-to-day work of the school (Grissom & Loeb, 2011; Hallinger & Heck, 1996). Finally, central office staff can guide principal decision-making and support professional development (Knapp & Feldman, 2012; Marks & Nance, 2007; Mascall & Leithwood, 2010). Researchers have suggested that principals cite positive social relationships among the top reasons for their continued satisfaction with schools (Friesen, Holdaway, & Rice, 1983; Johnson & Holdaway, 1994; White, Brown, Hunt, & Klostermann, 2011). The centrality of these relationships can also mean that poor social relationships can be among the top reasons for dissatisfaction.

Relationships with teachers. Relationships with teachers, however defined, are consistently related to job satisfaction among principals. Schmidt (1976), in a study of Chicago principals, found that interpersonal conflicts with teachers represented the most common hygiene factor reported by principals. Policy conflicts represented the second most common hygiene factor. In a study of Canadian principals, Friesen et al. (1983) found that relationships with teachers were the main source of satisfaction for principals. Johnson and Holdaway (1994), in a study of Canadian principals, found that working relationships with teachers were perceived by principals to be both the most important element to their overall satisfaction and the facet of their jobs that they ranked highest. Conley, Shaw, and Glasman (2007), in a survey of California principals, found that interpersonal relationships with other school personnel were predictors of satisfaction. The authors suggested that the quality of the organizational climate to foster enduring relationships could moderate job stressors for principals. White et al. (2011) also found that, among Illinois principals, interpersonal relationships with teachers were the most appealing aspects of the job. These findings were further confirmed by Liu and Bellibas (2018), who found a significantly positive correlation between satisfaction and staff mutual respect for all 32

countries within the TALIS 2013 dataset. Similarly, Gunn and Holdaway (1986) found that 14% of the variance between principal job satisfaction was attributable to working relationships with teachers. In follow-up interviews with principals, Gunn and Holdaway (1986) reported that unhappy, uncooperative, or unprofessional teachers contributed to dissatisfaction.

Relationships with parents. Only two studies examined the relationship between principal satisfaction and parental relationships. Friesen et al. (1983) identified relationships with parents as the high-frequency reported dissatisfiers in their qualitative study of 95 principals. A study of Australian principals by Fraser and Brock (2006) found that discourteous parents contributed to feelings of dissatisfaction. More research is needed in this area.

Relationships with students. Researchers have suggested that relationships with students are related to principal job satisfaction. Gunn and Holdaway (1986), in their mixed-methods study, found that principals report that they gain the most job satisfaction from working with and seeing positive outcomes from their students. Hill (1994) found that British principals attributed the most satisfaction as coming from interpersonal relationships with students, as opposed to staff. However, these principals acknowledged that they had limited time to spend with students given their managerial responsibilities. Darmody and Smyth (2011), in a large study of Irish principals, found that principals who taught classes had lower levels of satisfaction than administrators (42% satisfied compared to 54% very satisfied, $p < 0.001$). Johnson and Holdaway (1994) found that relationships with students were perceived by principals to be the second most important element to their overall satisfaction.

Relationship with central office staff. Researchers have consistently found that principal job satisfaction is affected negatively by poor relationships with central office staff. Iannone (1973), in an early study of New York principals, identified disappointments with supervisors,

frustrations with central office policies, and lack of agreement with the school board as drivers of job dissatisfaction. Similarly, Friesen et al. (1983) identified discordant relationships with school boards as the high-frequency reported dissatisfiers in their qualitative study of 95 principals. Chaplain (2001) reported that frequent changes to the curriculum by central office staff, as imposed by local or federal governments, contributed to double-barreled stress: principals had to understand and manage these changes and also deal with inevitable staff resistance to change. White et al. (2011) found that principals reported stress and accountability to be the least appealing aspects of their jobs. Given the rise of reform movements and the newfound power given to central office staff (Mehta, 2015; Sahlberg, 2016), more research in this area is needed.

Accountability and responsibilities. Previous sections have linked the enlarging scope of principal responsibilities and the more recent rise of global accountability movements with principal job dissatisfaction. The JDR model indicates that accountability can contribute to high job demands and low job control, leading to acute and chronic stress, health impairment, and thus lower job satisfaction (Bakker et al., 2005; Hobfoll & Shirom, 2000; Karasek Jr, 1979). An accounting of principal job satisfaction must, therefore, consider both general and principal-specific accountability mechanisms and responsibilities.

Accountability. Adamowki, Therriault, and Cavanna (2007) argued that, given the policy-rich environments in which principals work, principals act as *functionaries*, not *revolutionaries*. Their chief mandate is to the matrix of policies and stakeholders within the organization, limiting their independence. The research in this area has found that principals who are held accountable for district policies but feel they have little authority or decision-making power report lower levels of satisfaction. DiPaola and Tschannen-Moran (2003) found that, in their sample of 1,543 Virginia principals, 45% felt that they did not have enough authority to make decisions over

which they were accountable for according to central office policies. Similarly, principals who report higher levels of bureaucratization and accountability report greater dissatisfaction (Bacharach & Mitchell, 1983). Principals who are held to specific standards but are stripped of decision-making authority may experience feelings of helplessness and frustration. Using a series of focus groups in the United Kingdom, Mercer (1993) found that principals rated "having to deal with problems over which one has no formal control" as highest among organizational dissatisfiers (p. 158). The same principals also highly valued their authority to problem solve, often on the fly.

More contemporary quantitative studies using larger datasets have confirmed the direction of these findings. Chang, Leach, and Anderman (2015), using a large sample of U.S. principals, found that principals report high levels of attachment to their schools if they perceive their superintendents to give them authority in decision-making. Liu and Bellibas (2018) found that principals who reported low authority in budgeting reported lower levels of satisfaction ($\beta = -0.08$ $p < 0.01$), and principals who reported lower authority in setting instructional policy reported lower satisfaction ($\beta = -0.07$ $p < 0.05$).

Reform policies stemming from state and central offices, which inherently attempt to direct practices within schools, limit principals' autonomy (D. K. Cohen & Mehta, 2017; Gawlik, 2008). Vang's (2015) mixed- methods study identified how accountability practices in the United States impeded principal decision-making. Principals reported added pressure to conform to curricula and mandates, to prepare students for standardized tests, and to constantly report student and teacher progress. One response encapsulates these conflicts:

> Over the last 18 years, things have changed. I am older and wiser and less prone to 'jump on it' right now. But most of the 'fun' roles have been either centralized (taken over by the district) or decisions made at the state level (standards, curriculum, etc.). Sometimes I

> just feel like a plant manager and a 'Complaints Department' supervisor, forced to defend a broken system to which I am held ultimately accountable. (Vang, 2015, p. 199)

Scope of responsibilities. Studies consistently found that the variety and intensity of principal responsibilities predicted dissatisfaction. Mercer (1993) found that British principals were frustrated by needing to attend too many meetings while also being "constantly bombarded from all sides"(p. 158). Chaplain (2001) and Hill (1994), in separate small studies of British principals, noted the need to manage the curriculum, balance the finances, track human capital, and attend to student issues adds to high levels of principal stress. Brogan, Matthews, and Neil (2005), in a study of 128 U.S. principals from western states, found that principals who remained in school to supervise programming reported higher levels of dissatisfaction. Mercer (1997), in another small study of British principals, identified one response from a head teacher that encapsulates many of the qualitative responses within this literature around time constraints:

> I hate that feeling of being out of control and I'm afraid that's happening more and more, simply because of the outside factors. I often liken my job to the old plate spinner on television, going around starting plates up and then keeping them spinning and rushing back. And now we've reached the point where half a dozen of them are crashing to the ground, almost because I just haven't got the time to go and check that they're spinning still. (p. 65)

Additional studies point to principal frustrations with having to sink time into tasks that do not pertain to their primary responsibilities to improve student outcomes (Mercer, 1997; Webb et al., 2015). Bacharach and Mitchell (1983) found that membership on school committees predicted principal job dissatisfaction. The authors suggested that these committees sap time away from principals. This highlights the inherent conflict between the priorities of reform movements and principals' non-instructional duties (Marks & Nance, 2007; Supovitz & Poglinco, 2001).

School conditions. Researchers have long linked school characteristics with school climates and effective school leadership. The school's environment, its location, type, size, and

student population offers both constraints and resources that shape how principals lead (Hallinger & Heck, 1996). The literature on how school environments shape principal leadership has indicated that principals lead differently within different schools because school contexts change the demands on leadership (Goldring et al., 2008; Hallinger, 2018; Huang et al., 2018). Any examination of principal work should, therefore, be understood through models that account for the effects of school contexts.

School average SES. Only two studies examined student socio-economic advantage as it relates to job satisfaction. Bacharach and Mitchell (1983) found that schools with higher percentages of families below the poverty line and schools with higher diversity were strong predictors of dissatisfaction. Liu and Bellibas (2018) used structural equation modeling on the TALIS 2013 database to examine principal job satisfaction within 32 countries and 6,045 principals. The researchers found that the proportion of low-income students was positively related to satisfaction ($\beta = 0.07$ $p < 0.05$). The authors suggested that principals serving low-income students may feel stronger levels of commitment. The paucity of studies in this area is surprising given the relationship between SES, leadership performance, and school achievement (Hallinger, 2018)

School funding. Only two studies considered the relationship between satisfaction and school funding. Results were mixed. Vang (2015), in a hierarchical regression study of California principals, found that district per-pupil expenditures did not predict principals' job satisfaction. Liu and Bellibas (2018), using the much larger TALIS 2013 dataset, found that principals who received the majority of their funding from the government were much more likely to report dissatisfaction ($\beta = -0.11$ $p < 0.01$). This may suggest that principals in private schools are more satisfied than those in publicly funded schools, though more research is needed.

School size. Findings across the reviewed studies present some consistent relationships between school size and school type. Sparkes and McIntire (2012), in a study of rural schools in Labrador and Newfoundland, found that principals in schools with fewer than 16 teachers within communities with fewer than 1,500 people reported lower levels of job satisfaction. Sparkes and McIntire suggested that a lack of professional development resources, as well as few principal-level colleagues, contributed to these results. These results were supported by Darmody and Smyth (2011), who found that principals in schools with more than 280 students were likely to report being more satisfied than principals in smaller schools. Graham and Messner's (1998) study of principals in the Midwestern United States found that principals in small schools and large schools reported lower levels of satisfaction than those in midsized schools. However, Vang (2015) did not find any effects relative to school size.

School type. Graham and Messner (1998) found that principals in elementary schools were more satisfied than those in middle or high schools. Findings by Borg and Riding (1993) support this relationship. Wang, Pollack, and Hauseman (2018) found no link between grades served and satisfaction. Cooper and Kelly (1993) found that primary school principals reported higher rates of dissatisfaction and mental health issues. Cooper and Kelly (1993) suggested several reasons for these findings, including lower levels of administrative support staff in the primary sector, a limited amount of power, rewards, and task variety inside these schools, lower perceived status, and limited teaching resources which often necessitate principals to substitute for teachers. No study examined the interrelationship between school type and school size.

School location. Findings about the relationship between school location and principal satisfaction are mixed. Derlin and Schneider (1994) found that suburban principals and urban principals reported different needs. Suburban principal satisfaction was more affected by work

environment concerns, while urban principal satisfaction was more affected by salary considerations. Derlin and Schneider (1994) suggested that urban principals may be more satisfied by extrinsic factors than suburban principals. Chang et al. (2015) along with Friedman, Friedman, and Markow (2008) did not find suburban vs. rural effects, though Change et al. (2015) found differences between suburban and urban principals. Friedman et al. (2008) did find that adequate school facilities and equipment predicted satisfaction ($\beta = 0.12$ $p < 0.01$). Boyce and Bowers (2016b) found that, compared to suburban principals, urban principals were 1.8 times more likely to be in the dissatisfied latent group ($p = 0.06$). Furthermore, unsatisfied principals were twice as likely to work in small towns ($p = 0.06$) than satisfied principals.

Student achievement. Only one study examined the relationship between student achievement and satisfaction. Vang's (2015) hierarchical regression model using a large sample of California principals did not find that student achievement, as defined by adequate yearly progress, predicted job satisfaction. No other study could be identified that linked student achievement data to principal job satisfaction. Linking job satisfaction to achievement would require triangulating large datasets with satisfaction measures, presenting issues with data privacy.

School climate. Three studies reported consistent findings around the school climate. Darmody and Smyth (2011) found that satisfaction levels decrease in schools where more than a quarter of students are reported to have emotional or behavioral difficulties. These findings are supported by Friedman et al. (2008) in their study of principals across 29 districts in the United States. Negative student behavior had the largest standardized weight among a range of climate and decision-making variables ($\beta = 0.22$, $p < 0.001$) in influencing job satisfaction. Finally, Liu

and Bellibas (2018) found that perceived school safety was an influential factor in principal satisfaction in many countries.

Supervision. Most principals report to and receive support from supervisors from an organization with responsibility for and authority over the school. These might take the form of a superintendent, principal supervisor, district or regional CEO, or other forms of management. Mixed findings from four studies have suggested that the relationship between supervision and satisfaction requires additional study. Bacharach and Mitchell (1983) found that positive perception of supervisors predicted principal satisfaction. Chaplain's (2001) qualitative study of 36 British principals found that principals cited support as a resource. This support came in two forms, so-called organizational and structural supports: the former consisting of staffing, finance, and other resources and the latter consisting of problem-solving and emotional and coping capacity supports. However, some aspects of supervision, such as inspection reports, generated stress among principals. Fraser and Brock (2006) found that school leaders identified isolation from supportive supervision as one of the biggest reasons for their dissatisfaction. Using correlation analysis, Wong, Cheuk, and Rosen (2000) did not find that emotional support on the part of supervisors mitigated principal stress. They similarly did not find that additional information from supervisors mitigated job satisfaction.

Professional development. Only two studies examined the relationship between professional development opportunities and satisfaction. Darmody and Smyth (2011) found that perceived support regarding professional development for individual principals and for school-wide professional development was associated with higher job satisfaction. Maforah and Schulze (2012) also found that principals requested far more professional development resources than

they were given. Little else is known about how professional development affects job satisfaction or turnover (Snodgrass Rangel, 2018).

Human resources. Four studies identified how human resources contributed to job dissatisfaction and stress. DiPaola and Tschannen-Moran (2003) found that 66% of their sampled principals reported that they had neither the personnel to fulfill their mandates as instructional leaders, contributing to stress. Brogan et al. (2005) found that the number of assistant principals in the school predicted job satisfaction. Darmody and Smyth (2011) found that principals who reported adequate teacher staffing reported higher levels of satisfaction. Borg and Riding (1993) found that the most stressful factor that their sample of principals identified was a lack of human resources. This lack created other challenges, including principals needing to interrupt their work to find replacements, needing to substitute for missing teachers, and needing to spend time mid-year on the hiring process. Liu and Bellibas (2018) also found a positive relationship between a school's lack of human resources and dissatisfaction ($\beta = -0.16$ $p < 0.01$).

Time. All of the studies with variables measuring principal perceptions of time, identified time as a resource, albeit a much prized and much-needed resource. A perceived lack of time was consistently among the highest stressors among other variables. This undisputed finding is consistent even across school sizes, locations, types, and countries. Studies have indicated that principals report not having enough hours during their workday to complete the necessary work to keep their schools running. Many principals have reported bringing back hours of work on evenings and weekends. Cooper and Kelly (1993) found that 26.3 % of the variance in principal stress can be attributed to time pressures and reported long hours. In addition, additional identified principal stressors may be classified as offshoots of a lack of time. For instance, Wong et al. (2000) found that "insufficient time to work" as the highest reported stressor, among 20

common organizational and interpersonal stressors (p. 91). However, "too much work" was the second-highest reported stressor, while "difficulty in scheduling, monitoring, and training teachers" and "time in counseling teachers to improve their teaching," was the eighth and ninth-highest stressor. All of these are related to a lack of time to accomplish these tasks (Wong et al., 2000, p. 91).

Studies examining the relationship between recorded work hours and satisfaction have similarly found a consistent negative relationship (Friesen et al., 1983; Maforah & Schulze, 2012; Tekleselassie & Villarreal, 2011; Wang et al., 2018). White et al. (2011) reported that principals worked an average of 61.9 hours per week, but principals who stated their work hours were unappealing or very unappealing tended to work slightly longer hours per week.

Pay. Principal job satisfaction has been found to positively relate to job satisfaction and is one of the most well-researched areas around principal turnover (Snodgrass Rangel, 2018). Two studies found that pay directly predicted satisfaction (Darmody & Smyth, 2011; Friesen et al., 1983), though Bacharach and Mitchell (1983) did not find that pay predicted satisfaction. Winter, Rinehart, Keedy, and Bjork (2007) found that principals were attracted to their work climates and job security when asked whether they might consider becoming superintendents. Fraser and Brock's (2006) qualitative study of Australian principals found that while insufficient compensation was a consistent concern for these leaders, many noted the financial security of the position which encouraged principals to remain in their position. Graham and Messner (1998) found that younger principals were more dissatisfied with their pay than principals with 15 or more years of experience.

High-level needs-autonomy. Theory consistently suggests that autonomy is linked to greater general job satisfaction. The literature on principal job satisfaction has identified

evidence for this theory. Trusty and Sergiovanni (1966), in one of the first studies of administrator job satisfaction, identified esteem, autonomy, and self-actualization as needs directly related to job satisfaction. Chaplain (2001) also found that principals found their autonomy and self-efficacy to be effective coping mechanisms during stressful times. Boyce and Bowers (2016b) found that satisfied principals were more likely to report high levels of influence in establishing curriculum, budgeting, hiring, setting performance standards, and managing professional development (all $p < 0.05$). Federici and Skaalvik (2012) confirmed the direction of these findings using mixed-methods and structural equation modeling on their sample of Norwegian principals. Principals who reported higher levels of self-efficacy reported lower levels of burnout and intentions to leave their jobs. Principals who felt that they had a high locus of control reported lower levels of stress. For instance, one principal noted that the principalship "is much more enjoyable now that I understand and feel confident about managing the whole thing [budgeting]; it used to be a real nightmare" (Chaplain, 2001, p. 203). Similarly, a principal from Duke's (1988) in-depth study said, "it's been an intellectual challenge, keeping me up at night, testing myself against insoluble problems, which I guess is one of the things I like to do" (p. 309).

Principal autonomy, however, may be a sword of Damocles. Principals who enjoy greater autonomy may soon feel that they are fully responsible for all major decisions and consequences inside their schools, with few options to delegate responsibility. This responsibility may lead to overworking, exhaustion, and attrition. As one principal noted, "I find it very difficult to switch off, which often means I can't relax when I get home […] I feel I have to prepare for whatever trivia I am going to have to deal with tomorrow" (Chaplain, 2001, p. 203).

High-level needs-achievement and recognition. Job satisfaction theory similarly identifies achievement and recognition as strong predictors of satisfaction. Research again confirms this theory. Iannone (1973), in a qualitative study of New York principals, found that principals have two dominant needs: achievement and recognition. Miskel et al. (1975) and Miskel et al. (1980) reported that principals who report that the achievement aspects of their jobs were the most important of their interests reported higher levels of satisfaction. Gunn and Holdaway (1986), in a mixed-method study of 133 Canadian principals, reported that principals' sense of accomplishment contributed to 43% of the variance in job satisfaction. Sutter (1996), in a quantitative study in Ohio, found similar relationships between sense of recognition and variance in job satisfaction among assistant principals. He also found that principals who felt that they had actual opportunities to advance within the school system based on their achievements reported higher levels of satisfaction. Saiti and Fassoulis (2012) found that the possibility of promotion to a more advanced position contributed to satisfaction.

Qualitative studies conducted by Mercer (1993) and Hill (1994) found that principals valued the responsibility of leading a school. They were also attracted to the prestige of the job within the community, as well as the perception of the job as being meaningful in society. White et al. (2011) found that principals were split on whether the status of being a principal was an appealing aspect of the job. Forty-one percent felt that the status of the principalship was appealing. These findings were echoed in a sample of Greek principals (Saiti & Fassoulis, 2012). Acknowledgment and praise by superiors were associated with satisfaction and organizational commitment.

Demographics. Scholars have long documented how principal demographics shape leadership styles and school outcomes (Hallinger & Heck, 1996; Leithwood & Riehl, 2003;

Pietsch & Tulowitzki, 2017). Scholars have also attempted to locate relationships between principal job satisfaction and personal demographic characteristics, such as age, experience, education, gender, and family life. This literature has indicated that while some of these characteristics have been linked to satisfaction, no consistent relationship has emerged from more than fifty years of research. Furthermore, there is a conspicuous lack of studies that examine the relationship between race and satisfaction.

Age. Several studies have identified non-linear relationships between satisfaction and principal age. Trusty and Sergiovanni (1966) found that younger administrators (20-34) were more concerned with esteem, autonomy, and self-actualization and were more dissatisfied with their jobs. Eckman (2004) and Darmody and Smyth (2011) identified a U-shaped distribution among job satisfaction. Early career principals reported higher levels of satisfaction, with this satisfaction decreasing three to seven years into their careers. This satisfaction gradually increases, with principals in their 60s reporting the highest level of satisfaction. Findings by Borg and Riding (1993) supported this parabolic relationship. Wang et al. (2018) also found that younger principals were more likely than older principals to want to work in a sector other than education, suggesting that young principals' experiences may be more taxing.

Experience. Bacharach and Mitchell (1983) argued that experience can be a two-edged sword. While greater experience can increase satisfaction because administrators can better navigate the system, it can also create frustration when they become frustrated by bureaucracies or red tape. Subsequent research supports this theory. Trusty and Sergiovanni (1966) found that more experienced administrators reported a lower need for prestige and autonomy compared to less experienced administrators. They subsequently reported higher job satisfaction than younger administrators. Chang et al. (2015) found a significant interaction between perceived support for

principal autonomy and experience. Those principals with less experience perceived less support for their autonomous decision-making and lower job satisfaction. Darmody and Smyth (2011) found that principal stress and satisfaction levels are lower for those seven to ten years into their tenure at a specific school compared to newly-arrived principals in a specific school. New principals report lower levels of stress and higher levels of support than more experienced principals, while more experienced principals report higher levels of conflict with central-office staff (Bogotch & Riedlinger, 1993).

These Janus relationships may be explained best by two competing theories. The observed phenomena that older principals report higher levels of job satisfaction can be explained by Lortie's (1975) role constraints hypothesis that principals tend to socialize into the constraints of bureaucratized school systems. Those who remain in the system long term are those who tend to conform to the rigidity of the system. That new principals report lower levels of stress and higher levels of support may be explained by Merton's (1968) anticipatory socialization, hypothesis, wherein non-group members learn to take on the values and standards of the group they wish to join. New principals have not yet struggled (or not yet struggled to the same extent as veteran principals) with central-office regulations and policies.

Education. Only two studies in the past have examined the relationship between education and satisfaction. Brogan et al. (2005) found no effect of more advanced education, such as a doctorate or other professional degree, on satisfaction. Boyce and Bowers (2016b) found that dissatisfied principals were 1.5 times less likely to have attended programs for aspiring principals ($p = 0.06$). Additional research is needed in this area.

Gender. Many researchers have examined gender as a predictor of principal job satisfaction. Trusty and Sergiovanni (1966) found that female principals were generally more

satisfied than male principals. Females also reported higher satisfaction with the social, esteem, and autonomy of the principalship while males were more satisfied with aspects of job security. Fansher and Buxton (1984), using a convenience sample of female principals around the United States, reported that female high school principal job satisfaction was more positive the older and more experienced they were and the more encouraging feedback they received from their students. Hill (1994) also found males in his sample of British principals (headteachers) more dissatisfied than females. These findings were also reported by Sutter (1996). Darmody and Smyth (2011), Eckman (2004), Hardman, Leary, and Toth (1996), Schmidt (1976), and Wang et al. (2018), found no differences in gender. Brogan et al. (2005) and Cooper and Kelly (1993) found that male principals were more satisfied than females. Boyce and Bowers (2016b) found that female principals were 1.87 times more likely to be in the disaffected principals' latent group than the satisfied group ($p = 0.009$).

Studies of the differentiated experiences of females and males in the principalship identified the difficulty females face in the position. Women traditionally face a second shift of work caring for their families in the evening and weekends (Hochschild & Machung, 2012). These added responsibilities are thought to decrease job satisfaction. Duke (1988) captured this second shift responsibility in an interview with a newly remarried female principal describing the conflict between her job and her familial responsibilities:

> The first year [I was principal] we had two district meetings a month. I would sit there, and there were 26 men and three women. The closer it got to 6 p.m. - with a day-care service that charged me a dollar a minute for being late - the more nervous I would get. The men never worried. They would linger and do organizational business or go have a beer. It was in these after-meeting sessions that many of the real organizational decisions were made - and I couldn't stay around because of my child-care responsibilities. (p. 310)

Cooper and Kelly (1993), however, found that male principals had worse reported mental health, such as anxiety and depression compared to female principals. Graham and Messner (1998) also found that male teachers were more satisfied with their pay and fringe benefits than females.

Race. None of the reviewed principal job satisfaction studies examined the role of principal race. The relationship between race and job satisfaction has only been studied in one qualitative dissertation (with a sample size of 15) and the work reported no significant relationship (Turner, 2006). This represents a significant gap in the literature since sociologists have linked same-race teachers to better student outcomes (Gershenson et al., 2018). Researchers have also found that teachers with same-race principals, those who share race with their teachers, report higher job satisfaction (Grissom & Keiser, 2011). However, Snodgrass Rangel (2018) found that principal race and principal-school race match were inconsistent determinants of turnover indicators among six studies. While the effects of race represent a gap in the literature, the TALIS surveys are not strong tools to assess these relationships for various reasons elaborated in Chapter 3.

Family life. Three studies have examined the relationship between principals' family life and satisfaction. Gunn and Holdaway (1986) reported that 14% of the total variance of job satisfaction among their sample of 133 Canadian principals could be attributed to the effect of their jobs on their personal lives. Johnson and Holdaway (1994) found that principals' personal lives contributed to 31% of the variance in overall satisfaction. Chaplain (2001) found that principals who reported spending time working at home were perceived by family members to be devaluing them and putting them last. Chaplain reported that principals that spent time working at home caused additional stress on their family life.

Consequences of Principal Job Satisfaction

Much of the research to date has focused on the factors that predict principal job satisfaction. However, limited research has focused on the outcomes of principal job satisfaction. These consequences, however, are important in testing the JDR buffer hypothesis which suggests that job resources buffer the negative effects of job demands on burnout indicators (Bakker et al., 2005). These consequences can be split between internal consequences and external consequences. Though relatively few empirical studies have examined the consequences of principal job satisfaction for schools and student achievement, a combination of these studies and theory points to potential bivariate and moderating relationships between variables.

Internal Consequences

Stress. Job-related stress is a subjective condition when an employee's obligations are ambiguous, conflicting, or impossible to meet (Chaplain, 2001; Okoroma & Robert-Okah, 2007; Torelli & Gmelch, 1992). Principals are prone to this stressor as they are confronted with conflicting roles and demands. Even within specific roles, principals may not have a clear set of expectations about how to behave in their role or how their performance will be assessed.

While many studies examined stress as a predictor of job satisfaction, a more limited number of studies examined stress as a consequence of poor job satisfaction. Borg and Riding (1993) found a negative and significant correlation between administrator stress and job satisfaction. Darmody and Smyth (2011) found that while 93% of principals felt satisfied with their job, 70% of principals felt stressed. Darmody and Smyth also found that adequate resources reduced stress while low support increased stress. Cooper and Kelly (1993) found principals who reported more stress also reported worse health outcomes. These poor health outcomes included principal reported rises in anxiety, depression, and hysteria. Using a quirky research design, Carr

(1994) found that Australian principals who reported operating in a high-stress environment reported more frequent stressful dreams involving their schools. The principals also reported higher frequencies of depression and anxiety.

This literature does provide limited evidence for JDR's buffering hypothesis. Chaplain (2001) found that the resources of autonomy, self-efficacy, collegiality moderated job stress. Wong et al. (2000) found that additional lines of communication from supervisors can buffer job stress. However, they did not find that principal emotional support buffered stress. Guglielmi et al. (2012) found that principal resources mediated the relationship between self-efficacy and work engagement and burnout.

Retention and burnout. Individuals who, as a consequence of their jobs, experience severe distress also experience forms of burnout. Burnout is a physical and emotional exhaustion syndrome characterized by feelings of chronic physical exhaustion, feelings of hopelessness, feelings of helplessness, the development of a negative self-concept, and the development of negative attitudes towards the profession, life, and other people (Maslach, 2003). Burnout is associated with decreased job performance and job commitment, as well as health problems resulting from chronic stress (Maslach, 2003). It is one of the factors which influence the productivity of workers in all fields (Spector, 1997), but it is particularly relevant to the study of principals given their higher levels of responsibility and higher rates of turnover than teachers and others in the educational sector.

Several studies have identified a relationship between satisfaction, burnout, and retention. Bauer, Brazer, and Johnson (2019) found that principal work overload predicted principal intentions to leave. They also found that perceived social support predicted job satisfaction. Similarly, Sarros (1988) found that higher reported work stress and low satisfaction with the

amount of daily work principals faced predicted higher responses to emotional exhaustion and burnout indicators. DiPaola and Tschannen-Moran (2003) found that 26% of principals in their sample planned to retire in five years. Federici and Skaalvik (2012) measured burnout in 1,818 Norwegian principals using Maslach burnout inventory. Using structural equation modeling, the researchers found that job satisfaction is negatively related to principals' intentions to leave the principalship. They also found a significant and strong relationship between job satisfaction and burnout. Federici and Skaalvik found that low self-efficacy and low satisfaction predicted higher levels of burnout and intentions to leave. Guglielmi et al. (2012) found similar findings in their sample of 224 Italian principals. Beausaert et al. (2016), in a three-year study of 3,572 primary and secondary Australian principals, found that social support does not necessarily buffer job satisfaction to turnover intentions. While stress was significantly related to burnout in each study panel, Beausaert et al. found that the more social support the principal received from the border community the more likely they were to report burnout indicators. The authors suggested that principals who felt support from their community might be more connected and empathetic to the stressors within their school community. Beausaert et al. (2016) argued that if the community is struggling, the principal might be struggling as well.

External Consequences

Job performance. The literature connecting job satisfaction to job performance effects is nearly non-existent. Richford and Fortune (1984) found that principals who report high levels of job satisfaction also report fewer instances of manipulativeness, defined as manipulating others for personal gain. On the flip side, principals who report low levels of satisfaction report more frequent use of manipulativeness. This may suggest that job performance may be compromised by low levels of satisfaction. Saiti and Fassoulis (2012) found that principals who reported more

frequent instances of colleagues recognizing and encouraging their efforts strengthened their self-reported professional devotion to the school. A lack of data available for triangulation may be one reason for this dearth of research.

Organizational effectiveness. The relationship between principal job satisfaction and school organizational effectiveness, a school's productivity, adaptability, and flexibility, are poorly understood (Miskel et al. (1979). Organizational psychology literature has linked employee job satisfaction with stronger organizational outcomes (Bakoti, 2016; Halac & Prat, 2016). These outcomes, include employee asset turnover, return on equity, return on assets, revenue per employee, earnings before taxes per employee. These observed outcomes do not translate well into the field of education. However, Ostroff (1992) studied the relationship between teacher satisfaction and a range of outcome measures, including student academic achievement, student satisfaction, teacher turnover, administrative performance, student behavioral issues, and vandalism. Ostroff found evidence that schools with more satisfied employees tend to be more effective than schools with less satisfied employees. A weak link was found between teacher satisfaction and academic achievement. Unfortunately, no studies to date have examined the correlational or causal relationship between organizational effectiveness and job satisfaction. Answering these questions would require a large triangulated dataset with various measures for job satisfaction and organizational effectiveness or, better, yet, an intervention study. This type of dataset has not yet been established. Furthermore, the cost and logistics of causal research in educational leadership research has limited researchers from using these designs (Camburn et al., 2016).

Conclusion

While principal job satisfaction has not attracted the same interest as teacher job satisfaction, several studies suggest initial relationships. The literature on principal job satisfaction has already suggested several consistent findings. Mutually respectful relationships with parents, students, teachers, and supervisors or superintendents are associated with increased job satisfaction. These relationships can also sour principals' work satisfaction when these relationships are antagonistic, combative, or micro-managerial. Principals value their professional autonomy. This autonomy includes the ability to change programming, hire and fire teachers, and rework the mission of the school. Principals also demonstrate consistent satisfaction with different working conditions in schools. Poorly resourced schools or high levels of minority students, sometimes increased dissatisfaction. Principals in very small and very large schools reported more dissatisfaction than those operating in medium-sized schools. Principals reported higher dissatisfaction when they reported changes to school enrollment or curricula, chronic work overload, and a lack of support from central office personnel. Principals also reported that changes to central-office policies and ever-increasing leadership duties also caused dissatisfaction. These role demands and the conflicts related to the different roles of principals also compromised their ability to cope with aspects of principal work, although individual principals and educational institutions differed in how they reported stress. One finding was consistent across all studies of principal work: principals reported there is too little time to complete the many responsibilities that are both inherent in the role and, increasingly, legislated into the role.

Most studies of job satisfaction have been conducted in advanced economies, notably in the United States (see Table 1). The accumulated evidence has suggested that some of the

variables of job satisfaction are relatively consistent across countries, such as the demands of central-office and the limited resources of time. Because social contexts of principalship may have different significance across countries, researchers must be circumspect about generalizing findings based on theories and frameworks developed in or for one culture or nation without taking these differences into account. Similarly, many of these studies are only within one country or region. Studies that examine job satisfaction across multiple regions or countries can quantify cross-level interactions, such as the relationship between country-level supports and principal-level job satisfaction.

Additional methodological challenges hamper efforts at generalizability. Sampling bias, especially with convenience sampling within dozens of these studies, may not represent the targeted population. While some studies in this literature used random sampling (e.g., Friedman et al., 2008; Skaalvik & Skaalvik, 2011), some of these samples suffered from low response rates, which may suggest that respondents are poor representations of the sampled population (e.g., Vang, 2015; Webb et al., 2015; Winter et al., 2007). Inconsistent measurements of principal job satisfaction using different measurements make quantitative comparisons of results using meta-synthesis difficult. The reviewed findings indicate that, while the constructs of principal job satisfaction may seem comparable across studies, the variety of operationalized measurements of job satisfaction make quantitative comparisons between these studies difficult. Attempting to pinpoint which of the components of job satisfaction are significant across studies is statistically unfeasible.

Another methodological limitation in the principal job satisfaction literature is the near-exclusive use of cross-sectional data. Many studies only examined principal job satisfaction at a fixed point in time, usually once during that year. Cross-sectional job satisfaction surveys run the

risk of measuring job satisfaction on a specific day rather than job satisfaction across an entire year. Instead, longitudinal research would support the reliability and validity of these measures. Much of the research in this field also suffers from mono-method bias, with survey questionnaires often exclusive means of collecting data. While this method is more affordable than other methods, there are several downsides. Response biases common in surveys, such as social desirability bias, can skew results. Mixed-methods research is one way to work around these biases.

Many studies in the field of education have used pre-built instruments to measure the dependent variable. These include the job diagnostics survey (JDS), the Minnesota satisfaction questionnaire (MSQ), and the job description index (JDI). While these instruments allow for some consistency across studies, there are two limitations concerning their wide usage. First, the use of additional independent variables, such as researcher-constructed questionnaires, alongside these pre-built instruments inhibits the ability to make cross-study quantitative comparisons of findings using meta-analysis or other methods. Second, these pre-built instruments investigate wide-ranging dimensions of general worker satisfaction and are not specific to the contexts of principal work. Principal responses may conflate or misapply general satisfaction categories when attempting to respond to the survey within their specific school contexts. A principal given the JDI, for instance, will be asked “Think of your job in general. All in all, what is it like most of the time?” Principals can respond yes or no to a variety of responses, including “inadequate,” “better than most,” and “pleasant.” Principals will be faced with the task of understanding what “inadequate” means in the contexts of their work: does this refer to the need for more support, time, or pay? Similar issues can be seen in the JDS and MSQ.

Further, early research into principal job satisfaction relies heavily on simple correlation. The lack of multivariate analysis muddies which of the many variables that are thought to influence job satisfaction and correlate with other independent predictors of job satisfaction. Unmeasured factors in principal characteristics or school environments may also explain relations between various predictors and job satisfaction.

The inability to draw causal conclusions is another important limitation of these findings based on cross-sectional data. Satisfaction was treated as the dependent variable in these studies, but many of the independent variables could also have been used as a dependent variable. The relationship between satisfaction and student performance, for instance, may also be recursive. Principal job satisfaction may reduce staff turnover and improve student performance or improved student performance and reduced staff turnover may result in higher levels of principal job satisfaction. Analyses of cross-sectional data cannot address issues of causality.

Summary of the Research Gaps to be Addressed

The four strands of this literature review presented the need for an investigation into principal job satisfaction that takes into account the enlarged role of the modern principalship, international patterns in the principalship, theories about principal job satisfaction, and the inconsistent findings within the literature. The design of this study attempts to respond to these needs. While research efforts have begun to uncover how different aspects of demands and resources are implicated in the process, much remains to be learned. This dissertation contributes to the field of education by simultaneously accounting for principal characteristics and workplace conditions in the measures of job satisfaction and by probing moderating variables. This study used a large, internationally representative database to examine these relationships across countries. Interpretation of the findings from the analysis may point to measures that

schools, central-offices, and countries can take to raise job satisfaction. The next chapter presents the research question, survey sample, and the statistical analysis details for this study.

Chapter 3: Research Methodology

Introduction

This study addresses areas that have not received adequate attention in the literature: the relationship between principal demands, principal resources, and principal job satisfaction. Using multi-level modeling to examine the internationally representative TALIS 2018 survey, the study takes an iterative, exploratory approach to scrutinize the multi-level relationships with individual-level dependent variables (Raudenbush & Bryk, 2002). These models are used to investigate how various independent variables (delineated in Chapter 2) are related to principals' reported satisfaction. This chapter provides an overview of the research design and data source. It first describes the main research questions and hypotheses. Next, it presents a description of the TALIS sample and the survey sample items of interest. The chapter concludes with an outline of the data strategies that are used in the multilevel models.

Research Questions

Research Question 1: To what extent does principal job satisfaction vary within and across countries?

> **Hypothesis 1a:** There will be enough variation in the dependent variable, as represented by the intra-class correlation, to justify hierarchical linear modeling.

Research Question 2: Which school resources are positively associated with job satisfaction and which school demands are negatively associated with job satisfaction?

> **Hypothesis 2a:** The following school resources will be positively associated with principal job satisfaction:
> - School staff resources
> - School management teams
> - Organizational innovation
> - Distributed leadership
> - Collaboration
> - Trust
>
> **Hypothesis 2b:** The following principal resources will be positively associated with principal job satisfaction:

- Principal autonomy
- Professional development opportunities

Hypotheses 2c: The following school demands will be negatively associated with principal job satisfaction:

- Accountability
- Proportion of socio-economically disadvantaged students
- Proportion of non-native students
- Teacher turnover
- School safety issues
- Shortage of infrastructure
- Shortage of qualified teachers
- Barriers to professional development

Hypothesis 2d: The following principal demands will be negatively associated with principal job satisfaction:

- Job stress
- Proportion of time spent on administrative duties per week

Research Question 3: Do the hypothesized job demands and job resources variables fit into unidimensional demands and resources factors and do they form scales?

Hypothesis 3a: The independent variables of interest will load onto particular factors corresponding with the job demands resources theory without complex loading.

Research Question 4: How does the level of school resources moderate the relationship between school demands and principal job satisfaction? To what extent is this hypothesized relationship stronger for principals who report lower levels of resources, compared to those who perceive higher levels of resources?

Hypothesis 4a: The following school resources will moderate the relationship between demands and principal satisfaction:

- Collaborative environments
- Principal trust in teachers

Hypotheses 4b: The following principal resources will moderate the relationship between demands and principal satisfaction:

- Salary
- Terms of job benefits and work schedule
- Job satisfaction with the profession

Research Question 5: To what extent does the relationship between demands and resources on job satisfaction vary within-country and between countries? What might explain these contextual differences?

Hypothesis 5a: Contextual effects will be detectable

Research Question 6: How do country-level investments in education change the relationship between demands and resources on job satisfaction? How is this subsample of OECD countries different from the larger sample? How does the United States compare to these other countries?

Hypothesis 6a: The following *educational investments* will be positively associated with reported levels of job satisfaction:

- Country average educational spending
- Country average per-pupil spending
- Country average autonomy
- Country average principal salary
- Country average principals' relative earnings compared to similar workers
- Country average societal value of the principal profession

Research Design

This study employs hierarchical linear modeling to examine relationships between principal job satisfaction and school demands and resources within the 48 TALIS 2018 countries and, additionally, in a subset of 28 countries from the TALIS 2018 dataset. This subset was selected based on the availability of second-level data on OECD country investments in education indicators, such as using purchasing power parities (PPP), average student-teacher ratio, and average perception of the importance of education. These 28 countries are listed in Appendix A and a list of total countries in the TALIS 2018 without OECD data is also in Appendix A. The use of these second-level indicators control for country-level variation in the data, while principal and school-level variables control for school-level variation in the data. This dissertation examined only the 2018 TALIS results and so temporal ordering of these indicators cannot be established. These data are cross-sectional and explore associations, rather than the effects, the relationship between variables. Given the paucity of studies on the subject, this study serves as an initial probe of the relationships between these variables that can inform later development of experimental designs in this research area.

Data Source

Overview. The TALIS of 2018 is the largest international survey of teachers and principals ever conducted. The OECD administers questionnaires to teachers and principals to gather data on the learning environments of schools across the world. The overall survey is intended to gather data about nine areas of education including school leadership, teacher instructional practices, teacher professional development, teacher education and initial preparation, teacher feedback, school climate, job satisfaction, human resource issues and stakeholder relations, and teacher self-efficacy. The project is part of the larger OECD Indicators of Education Systems (INES) project designed to create a set of indicators on educational inputs and results across the globe. The goal of TALIS is to generate internationally comparable information on teaching and learning conditions. The survey is funded by the European Union, the OECD, and governmental organizations within each country. TALIS was developed with input from a group of international education scholars, teachers, principals, and psychometric experts (TALIS-OECD, 2018).

The first cycle of TALIS was completed in 2008, while the second was completed in 2013. TALIS 2018 represents the third data-gathering cycle. An international team of scholars added or changed various elements across each TALIS cycle in keeping with larger OECD data collection goals. The 2018 survey, refined in 2015 and 2016 through focus groups, pilot studies, and field trials, was completed between March to May of 2018 for countries in the northern hemisphere and September through December 2017 for countries in the southern hemisphere. The standardized country-by-country requirements for representative sampling procedures coupled with the consistency of data collection and quality assurance procedures of collections

across countries and economies means that the TALIS dataset is high reliability (TALIS-OECD, 2018).

*The advantage of TALIS 2018***.** While the TALIS 2013 and TALIS 2018 surveys contain questions relating to principal job satisfaction, school climate, and principal characteristics, using the TALIS 2018 has several advantages. The 2018 TALIS added several additional sections to the 2013 survey, including questions on equity and diversity, innovation, principal stress, and the professional development needs of principals (TALIS-OECD, 2018). Questions were also added to address the rise of online education, teacher shortages, the rise of refugees in schools, and the communal dimensions of school climate. The first TALIS survey cycle, conducted in 2008, included 24 countries and economies. The second cycle, conducted in 2013, included 34 countries and economies. The 2018 TALIS included 48 countries and economies. A full list of countries is included in Appendix A. The TALIS 2013 included around 7,000 principals, while the TALIS 2018 totals 15,980 (TALIS-OECD, 2018). The TALIS 2018 is also the most current version and better reflects the current educational realities in each country.

*Data releases***.** The first volume of the TALIS 2018 results, along with a technical manual, was released in June 2018. This first volume, *Teachers and School Leaders as Lifelong Learners,* focused on how teachers apply professional development and training to their teaching practices. It also examined the relationship between the demographic makeup of schools and learning environments. This policy-oriented publication is intended to help countries reassess their educational priorities around teacher learning supports. All the relevant data from the TALIS 2018 surveys were released alongside the volume.

International Data Collection

Sample frame and selection. Statistics Canada oversaw the country-by-country sampling selection procedures of TALIS 2018 (TALIS-OECD, 2018). They asked participating countries to provide a complete list of all schools within the International Standard Classification of Education (ISCED) frame of interest. Countries were required to include a national identifier, a measure of size, funding structure, and academic focus (if vocational). Most countries stratified based on these variables and other considerations, such as geography. After countries established their sampling frames, a systematic random sampling procedure used probability proportion to size procedure within each stratum to select participating schools. This two-stage sampling procedure meant that a school's chance of selection was proportional to its size. To ensure that the school sample selected to participate in the survey remained proportional to the population of schools in the country, TALIS 2018 prohibited excluding more than five percent of schools from the population (remote or small schools, for example).

Non-response and substitutions. TALIS 2018 attempted to prevent school-level non-response by selecting two replacement schools for each school in the sampling frame (TALIS-OECD, 2018). These schools were selected just above and just below the selected school within the frame. This was done to maintain the sample size required in each country and to reduce non-response biases since schools with the same characteristics on expectation were selected as a backup (and therefore would maintain its probabilistic features). Countries that reported less than 75% school participation after substitution had to demonstrate that their sample was not significantly biased. Table 7 in the Appendix illustrates the response rates before and after substitutions. The average response rate for all principals in TALIS 2018 before replacement was 84.82% (sd = 15.99) and 91.49% (sd = 9.92) after replacement. This study uses the sample

weights included in the TALIS 2018 database to reduce non-response bias. Response rates and principal survey weights are available in the TALIS 2018 technical manual (TALIS-OECD, 2018).

Indices and scales. Individual questions on TALIS questionnaires are designed to form scales around principals' beliefs, practices, and attitudes. By combining single items into larger scales, TALIS can provide higher levels of reliability and validity and reduce multicollinearity. Creating these scales can measure different characteristics of the item that combine to make the scale of interest. For instance, the survey asks about multiple dimensions of principal stress, such as having too much administrative work, feeling intimidated or abused by students, or keeping current with changing requirements from educational authorities. Confirmatory factor analysis conducted by TALIS using Mplus that takes into account the stratification and clustered sampling design of the survey (TALIS-OECD, 2018).

All scales created for this dissertation use traditional Cronbach's alpha to measure the reliability of scales. For all TALIS created scaled scores, TALIS 2018 reports McDonald's omega coefficients (ω). Unlike Cronbach's alpha, omega coefficients correct for uncorrelated error variance (one factor cannot account for all the shared variance from the indicators to prevent overestimation) and tau equivalence (individual indicators must contribute equally to the factor to prevent underestimation; Revelle & Zinbarg, 2009). Omega can, therefore, consider the strength of the association between items and constructs. Several studies have indicated that is one of the strongest alternatives for estimating reliability (Trizano-Hermosilla & Alvarado, 2016). Threshold values above 0.70 are regarded as adequate for social science research (Revelle & Zinbarg, 2009).

Country-Level Indicators. To control for the wide variation in the contexts in which principals work, an additional data source, the Education at a Glance 2018, are used for country-level data. Some of the 2018 indicators used in this study include the salary of principals, the levels of decision-making in educational systems, and per-pupil levels of financial investments. These data are collected annually through a joint partnership between the OECD, the National Excellence in School Leadership Institute (NESLI), the UNESCO Institute for Statistics (UIS), and Eurostat (OECD, 2018). Statistics staff at national ministries of education completed questionnaires at the end of the school year regarding student enrollment, graduates, personnel, finances, class sizes, salary, and country population. Data sharing is compulsory for European Union member states, while nearly all OECD participatory states also contribute their data. These data must follow formalized protocols and are cleaned and reviewed by the OECD. This data is publicly available.

Comparative Framework

As noted previously, I use Adler's (1983) comparative management research framework to compare organizational management in and across many foreign countries to identify emergent universal themes. Adopting this framework requires several methodological prerequisites that, after this chapter's detailed introduction to the TALIS dataset, can now be discussed. Adler (1983) noted that to conduct this research with validity, the research topic must be conceptually equivalent and important across all the countries studied. Therefore, the concept of job satisfaction should have both the same meaning across all of the countries in the TALIS database and the same relative importance to principals in these countries. Adler also suggested that the main methodological issue of this framework concerns design: has each step of the data conceptualization and collection been designed with reference to specific cultures under study?

Researchers tasked with collecting and cleaning the TALIS have taken great strides in addressing issues of sampling, measurement, instrumentation, translation, administration, and analysis across countries (Becker et al., 2013; Strizek et al., 2014; TALIS-OECD, 2013). The TALIS codebooks and guidebooks address each of these issues in detail, noting, for instance, how concepts were translated to reflect specific cultural factors or how survey administration took into account country-specific needs. TALIS documentation also noted the reliability and validity of survey items across countries. Indeed, the OECD designed TALIS as a tool in understanding and comparing principal and teacher work across countries (Becker et al., 2013; Strizek et al., 2014).

Operational Definitions of the Variables

The JDR framework, in conjunction with the literature review, was used to select and organize independent variables of interest. Variables were assigned as demands or resources, but this assignment was not without limitations. In the JDR framework, specific job characteristics are characterized as either demands or resources. The dichotomous bucketing of these characteristics is informed by assumptions within the theory that demands and resources activate independent process. Demands necessitate cost effort and consume resources. Resources fulfill basic psychological needs (Bakker & Demerouti, 2007). However, principals experiencing low resources (e.g., staffing) implies that they now experience added demands (e.g., demands of hiring more staff). Thus, paradoxically, a lack of resources may be considered a demand. Why, therefore, are two constructs needed? In a 15 year review of JDR research, Bakker and Demerouti (2017) acknowledge that the flexibility of JDR can create ambiguity about whether a specific job characteristic represents a resource or a demand. They argue, however, that demands are specifically those variables that "consume energy because they have to be fulfilled" whereas

resources initiate motivation (p. 278). They argue, echoing the two-factor theory, that the absence or presence of a job demand does not motivate an individual. Schaufeli and Taris (2014), in a critical review JDR, alternatively suggest that demands are *valued* negatively and resources are *valued* positively. This issue has yet to be resolved within the literature.

Individual variables and scales within the TALIS 2018 do not necessarily fit cleanly onto these two constructs. An argument can be made to place a shortage of qualified teachers as both a demand and resource, since presumably not having a shortage of qualified teachers may be considered a resource. However, this section is informed by the foundational ideas in JDR literature and, specifically, by Schaufeli and Tari's (2014) appendix which uses empirical JDR research to inform this choice. Chapter 4 uses exploratory factor analysis and confirmatory factor analysis to scrutinize whether individual variables load onto a demands or resources construct. This method therefore also tests this assumption and limitation in JDR theory. Furthermore, the contours of survey items from the TALIS 2018 dataset informed but also limited the operationalization of the constructs found in the literature review. For instance, the TALIS survey did not ask for total hours per week that principals worked, despite this being a strong indicator of overcommitment, stress, and job dissatisfaction. Furthermore, this study uses secondary data so some constructs from the JDR framework may be operationalized using proxies, using only one variable or using TALIS created indexes. The limitations of these methods are discussed in Chapter 6.

Dependent Variable

Job satisfaction. The dependent variable for this study is a scale measure of principal job satisfaction with their working environment. For this dissertation, I focus only on the job satisfaction with current workplace, as the previous chapter has shown that the literature on job

satisfaction is chiefly interested in satisfaction with the experience as an employee within institutions. Therefore, the scale does not include the five questions in the TALIS 2018 that ask about satisfaction with the profession as a whole, but only the four questions directly relate to the work environment. A Likert scale (strongly disagree, disagree, agree, strongly agree) of four questions form my job satisfaction scale. These items range from 0-3, with my final scale of these four items theoretically ranging from 0-12. These include *"I enjoy working at this school," "I would recommend this school as a good place to work," "I am satisfied with my performance in this school,"* and *"All in all, I am satisfied with my job."* While these items seem related *prima facie,* I use Cronbach's alpha, as well as exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to specify and assess the fit of this four-item Likert scale measuring the latent variable of job satisfaction. In other words, are these four observed variables good measures of the latent variable of job satisfaction (SATISFACTION)?

With only four items, the test scale's alpha is 0.76. This suggest a reasonably strong alpha coefficient based on responses from TALIS 2018. The average interitem covariance is 0.16, also within normal bounds. This, coupled with the strong face validity and construct validity mentioned earlier in the chapter, suggests that these items do tap into the underlying construct of job satisfaction among principal respondents. I next ran exploratory factor analysis: factor loadings are reported in Table 2. The results, based on eigenvalues, suggests that all items load onto a single factor. I then used CFA to add additional evidence for this assertion.

I performed CFA using both *sem* (structural equation modeling) and *gsem* (generalized structural equation modeling) commands in Stata, with the former treating the measures as continuous and the latter treating those variables as categorical. However, standardized factor loadings and goodness of fit post estimation commands are only available for *sem* commands. I

therefore report both results in Tables 3 and 4. Using the *sem* and *gsem* commands, I modeled SATISFACTION as measured by four observed variables from the TALIS 2018 dataset. I used maximum likelihood method and set the variance of the latent variable to 1 so that the standard deviations are 1 to aid in interpretability. I set the data as survey data, with sampling weights as suggested in TALIS technical documentation. Chi-squared tests are not available with *gsem.*

To examine parameter level fit I ran the *sem* command and reproduced those results in both Figure 5 and Table 3. The columns represent regression models while the rows contain factor loadings, intercepts, and error variances. The unstandardized standardized factor loadings (coefficient column) are reported in the first column. The corresponding *p* values for each of the factor loadings is below the cutoff of 0.05, the first assessment of this model. I can reject the null hypothesis that the factors are equal to 0. The factor loadings in this model are statistically significant. The unstandardized factor loading for "*I am satisfied with my performance in this school"* (tc3g44i) is 0.71, meaning that one standard deviation increase in satisfaction leads to a 0.71 standard deviation increase in the response to the enjoyment question. The strongest factor loading, "*All in all, I am satisfied with my job"* (tc3g44j), is 0.83. This is predictable given the sweeping wording of the question. Table 4 reports results for the *gsem* models. This model considers the categorical nature of this data. The coefficient column in also reports the intercept of each of the four items. In this unstandardized model, each of these intercept values are the predicted values when SATISFACTION is at the mean. The estimated variances of the measurement errors are also reported at the bottom of Table 4.

This simple CFA suggests that the four-question additive scale appropriately measures the latent construct of work satisfaction with the environment ($\alpha = 0.76$). The kurtoses for weighted job satisfaction, a measure of the combined weight of the tails of the distribution

relative to the rest of the distribution, is outside the normal distribution and the Shapiro–Wilk test for normality confirms this ($p = 0.000$). The skewness, a measure of distortion for the normal distribution, is high with a left side distribution (mean = 9.58). However, the impact of skewness and kurtoses is very small given the large sample size.

Independent Variables of Interest

Demands-Accountabilities and Responsibilities

The proportion of time spent on administrative duties per week. In this study, the average time principals spent on administrative duties is a continuous variable based on principals' self-reported estimate of the percentage of time they spend over the course of the year on "administrative tasks and meetings." The TALIS 2013 collapsed administrative tasks (e.g., school budget and timetables) with leadership tasks (e.g., strategic planning), but the 2018 cycle separates those tasks into "administrative tasks and meetings" and "leadership tasks and meetings." This separation allows for more accurate differentiation between administrative and instructional tasks, with the latter associated with stronger student performance and longer principal retention (Horng et al., 2010; Supovitz et al., 2010). Principals also estimated proportion of time for other tasks, including curriculum tasks, student interactions, parent interactions, and community interactions. The mean percent of time spent in administrative tasks and meetings is 27.28%.

Accountability. TALIS 2018 did not have many indicators for the degree of accountability within school systems. Accountability may, however, be captured by a question regarding external inspectors of teachers. The survey asks how often (never, less than once every two years, once every two years, once per year, twice or more per year) external individuals formally appraised teachers. This variable is used as a proxy for the degree of accountability

within the school since the presence of outside educational officials can signal the accountability milieu. A third (34.5%) of schools never hosted external evaluators, while 20.1% of schools hosted external evaluators at least once per year.

Work stress. Three variables are used to indicate whether principals report sources of stress in their work emerging from the scope of their responsibilities. These sources of stress include teacher appraisal, administrative work, and extra duties due to staff absences. While reliability is acceptable for this TALIS created scale ($\alpha = 0.64$), this scale had mostly moderate and weak factor loadings (Range of $0.37 \leq \omega \geq 0.98$, with 25 countries reporting less than 0.70). The average principal reported that these sources represented "some extent" of workplace stress.

Barriers to professional development. Five items are used to measure principal barriers to professional development. These barriers include a lack of employer support, work conflicts, financial resources, time, and incentives. While professional development itself is a resource, barriers to professional development represent a demand on principals, since in this survey they measure conflicts in resources, time, and other variables. This sentiment scale (strongly disagree, disagree, agree, strongly agree, five items, $\alpha = 0.75$) examines whether principals are able to access professional learning opportunities to enhance their practice. On average, across all countries, principals score a 1.62 on this sentiment index related to their ability to complete professional development, suggesting low average barriers to professional development.

Demands-School Conditions

Shortage of Infrastructure. Schools that lack basic infrastructure and instructional materials require principals to spend time attending to these so-called fires: They need to organize fixes for poor physical structures, figure out how to acquire text-books or fix crises unrelated to teaching and learning (Sebastian et al., 2018; Spillane & Hunt, 2010). According to

the guidance by Schaufeli and Taris (2014), a lack of instructional and material infrastructure should not be interpreted as a lack of resources, but instead represents a demand on principals' time. Principal-reported shortages of infrastructure, such as textbooks, libraries, or the internet, and physical infrastructures, such as classrooms or heating, are measured using a TALIS created Likert scale (not at all, to some extent, quite a bit, a lot, five items, $\alpha = 0.86$). Over 30% of teachers reported that shortage of infrastructure was "quite a bit" or "a lot" of a problem in their school.

Socio-economic disadvantage. TALIS 2018 offered the following definition of socio-economically disadvantaged students as students "lacking the basic necessities or advantages of life, such as adequate housing, nutrition, or medical care" (TALIS-OECD, 2018, p. 400). Principals estimated the overall percentage of students from this category (none, 1-10%, 11-30%, 31-60%, more than 60%). This is the only indicator in the survey for SES. Just 17% of principals reported more than 30% of students in this category.

The proportion of non-native students. TALIS 2018 offers the following definition of immigrant students as those who are "born outside the country. A 'student with a migrant background' has parents who were both born outside the country" (TALIS-OECD, 2018, p. 400). Principals estimated the overall percentage of students from this category (none, 1-10%, 11-30%, 31-60%, more than 60%). Other indicators of non-nativity include an indicator for students who are refugees or students whose first language is different from the other languages of instruction (3 items, $\alpha = 0.78$). Just 17% of principals reported more than 10% of students in this category.

Students with special needs. TALIS 2018 defined students with special needs as those whom a "special learning need has been formally identified because they are mentally, physically, or emotionally disadvantaged." (TALIS-OECD, 2018, p. 400). Principals estimated

the overall percentage of students from this category (none, 1-10%, 11-30%, 31-60%, more than 60%). Just 20% of principals reported more than 10% of students in this category.

Shortage of qualified teachers. A measure of principal-reported shortages of teachers is represented by a TALIS-created scale for lack of human resources. An inability to find strong replacements for teachers creates administrative burdens on principals who must spend time on recruitment, hiring, induction, and coverage for teachers who have left. Three Likert-item questions about qualified teachers, teachers for special needs students, and vocational teachers were used to create this scale climate (Range of $0.48 \leq \omega \geq 0.91$, with six countries reporting less than 0.70, $\alpha = 0.72$). Thirty-seven percent of principals in the sample noted that this turnover was "quite a bit" or "a lot" of a problem.

Teacher turnover. In this study, principal-reported turnover is measured using a proportional count of teachers who left the school during the last year. Principals were asked to indicate the number of teachers who left (0, 1-5, 6-10, 11-15, 16 or more). Their responses were divided by the total number of staff in the school (with the midpoint chosen from the turnover category). This produced a school-level percent of turnover indicator proxy (it is not an exact measure of turnover given the categorical responses to the first turnover question). On average, 9% of teachers left the school during the last year. It is possible, in a few outlying cases, for this percent to go above 100 if a school completes mid-year hires and then suffers a large amount of turnover.

School safety issues. A TALIS-created scale of school delinquency and violence is used to indicate issues of safety within school climate (Range of $0.69 \leq \omega \geq 0.97$, with two countries reporting less than 0.70, six items, $\alpha = 0.89$). This scale is comprised of three items measuring intimidation or bullying among students, physical injury caused by violence among students,

intimidation or verbal abuse of teachers or staff. The majority of principals reported that violence "never" occurs among students.

Resources – Principals

Effective school leadership requires the successful use of educational resources. Previous sections indicated that employee resources are linked to an employee's job satisfaction. Bakker and Demerouti (2007) noted that social support, supervisory coaching, performance feedback, and time control are all included in job resources. For principals, these resources include both the general and more role-specific organizational, physical, and monetary aspects of the job. These include supervision, professional development, personnel, pay, time, and higher-order needs, such as autonomy and recognition. These resources can be divided into school job resources and principal job resources. School resources include organizational supports and school environmental supports that stimulate motivational potential. Principal job supports are individual motivators, such as pay or feelings of achievement. These resources stimulate motivational potential by lowering cynicism, turnover indicators, and stress (Bakker et al., 2005). The benefits of resources are felt most intensely by those in high demand jobs (Bakker & Demerouti, 2007) such as school leadership (Montgomery & Rupp, 2005). The findings regarding principal job resources, though more consistent than findings on principal job demands, are nevertheless sparse and contain several discrepancies which necessitate further research.

Professional development opportunities. Ten dummy variables are used to indicate whether or not principals participated in professional development activities in the last year. These activities include courses, seminars, conferences, formal programs, coaching, participation in networks, and reading professional literature. These data were transformed into a categorical

index of principals' participation, with each point measuring an additional type of participation. On average, principals reported at least six opportunities throughout the year.

Salary. One question was used to quantify principal satisfaction with pay. Principals were asked to rate their satisfaction to pay using a Likert sentiment score (strongly disagree, disagree, agree, strongly agree). Forty percent of principals agreed that they were satisfied with their pay.

Terms of job benefits. Principals were also asked to rate whether, aside from their salary, they were satisfied with the other terms of their contract. TALIS 2018 suggested that these other terms include benefits or work schedule. This was rated using a Likert sentiment score (strongly disagree, disagree, agree, strongly agree). Fifty-two percent of principals agreed that they were satisfied with their benefits.

Autonomy. Autonomy was measured using two TALIS-created indexes. Principals were asked the degree to which other stakeholders (such as other administrators, teachers, school boards, or central-office authorities) held active roles in decision making. These included, for instance, hiring and firing teachers, establishing salaries, or choosing curricula. A TALIS-created index for autonomy for budgeting and staffing were derived from six frequency count questions. Interestingly, while 28% of principals reported no autonomy for staffing, 60% of principals reported no autonomy for budgeting.

Satisfaction with the profession. Four questions were used to represent principal sentiment about their satisfaction with the profession itself, not the particulars of the school they lead. These questions examined whether principals believe it would have been better to choose another profession, whether they regret becoming a principal, whether they would still choose the profession if they could decide again, and whether the advantages of the profession outweigh

the disadvantages. The model fit for this scale was acceptable in all countries, with high reliability in nearly all countries (Range of $0.67 \leq \omega \geq 0.95$, with three countries reporting less than 0.70, four items, $\alpha = 0.73$). A correlational model between job satisfaction with the profession and the dependent variable, job satisfaction at the school indicates that the two scales are moderately positively related for all of the countries (0.48) with correlations ranging from 0.39 to 0.65 in individual countries. On average, principals "agree" that they are satisfied with the profession (reverse coded for the negative sentiment questions).

Resources- Schools

Distributed leadership. Five questions form a TALIS stakeholder participation leadership scale that examines the extent of distributed leadership at the school. A Likert sentiment scale is used to quantify the participation of staff, parents, and students in decision-making. Questions of shared responsibility and mutual support are also included in this scale. The scale exhibits a mostly good fit, with some countries reporting poor fit (Range of $0.59 \leq \omega \geq 0.93$, with eight countries reporting less than 0.70, $\alpha = 0.74$). Most principals "agree" that there is distributed leadership in their schools.

Principal trust in teachers. Three new variables on the TALIS 2018 are used to represent the extent to which principals trust teachers to uphold the school climate. These variables cover whether teachers understand the school's curricular goals, whether they succeed in implementing the curriculum, and whether they hold high expectations for student achievement. The scale exhibits a strong fit (Range of $0.60 \leq \omega \geq 0.94$, with six countries reporting less than 0.70, $\alpha = 0.76$). Most principals in the sample trust their teachers at least "quite a bit."

Organizational innovation. Four variables are used to represent school flexibility towards change. The standard TALIS Likert scale (strongly disagree, disagree, agree, strongly agree) is used to report a composite score for the extent to which principals believe that: "This school quickly identifies the need to do things differently," "This school quickly responds to changes when needed," "This school readily accepts new ideas," and "This school makes assistance readily available for the development of new ideas." The scale (Range of $0.57 \leq \omega \geq 0.94$, with two countries reporting less than 0.70, $\alpha = 0.86$) is considered strong by the OECD, despite weak factors loading in a few countries. On average, principals in the sample agree that their schools exhibit organizational innovation.

School staff resources. In this study, school staff resources were measured using a proportional measure of teachers to the number support personnel in the school. Support personnel includes both pedagogical support employees (e.g., professional curriculum specialists, instructional specialists, educational media specialists, and psychologists) as well as school administrative staff (e.g., receptionists, secretaries, and administrative assistants). For all schools across the sample, the average reported teacher to support personnel ratio is 16:1.

School management teams. The presence of additional school leadership support was measured in proportion to the number of teachers. Management teams in this study include other principals, assistant principals, and management staff. The average reported teacher to management ratio is 6:1.

Collaborative environments. A TALIS 2018 scale of five variables are used to examine collaborative environments. These include whether the school has a culture of shared responsibility, a culture of mutual support, a culture of shared common beliefs about teaching and learning, and whether teachers can rely on one another. The scale (Range of $0.60 \leq \omega \geq 0.96$,

with five countries reporting less than 0.70) is considered strong by the OECD, despite weak factors loading in a few countries. On average, principals in the sample agree that the schools exhibit collaboration.

Control Variables

Principal characteristics. Principal variables were included in the models to control for individual principal differences in job satisfaction. These variables include a dummy variable for female, who comprise 47.18 percent of the sample. TALIS reported principal age as age groups with 8.21% reporting in the under 40 age group, 32.23% reporting in the 40-49 age group, 43.84% in the 50-59 age group and 15.74% in the 60+ age group. Before treating these groups as ordinal variables I tested these groupings to examine whether we can assume their effect was equal across age groups. I tested this assumption first using ordered logistic regression with age groups as the independent variable and found that the effect of age was equal across groups (the effect of one age group was not significantly different than the effect of other age groups on job satisfaction). I also tested whether adding each age group as dummy variables improved models 1-4 and 1.1-4.1. Results suggested that I should treat these groupings as a single, parsimonious ordinal variable. Principal experience in teaching and in the principalship at the school were also recorded, with 18.8 and 6.41 average years of experience across the sample, respectively. Average total years of experience in the principalship was dropped as a variable of interest as the survey asked for total years of principalship experience and therefore experience in the school overlapped. Unsurprisingly, the two measures were strongly correlated with years of principalship at the school.

Since prior research had shown that principals with doctoral degrees were 1.5 times more likely than those without doctoral degrees to want to leave their schools, and may, therefore, be

unsatisfied (Baker et al., 2010; Tekleselassie & Villarreal, 2011), categorical variables were created for principals with the equivalent bachelor's degree (ISCED Level 6), master's degree (ISCED Level 7), and doctoral degree (ISCED Level 8). Only four percent of the sample reported doctoral degrees.

School characteristics. School control variables were added as dummy variables (Agresti, 2018). These dummy variables include urbanicity (rural, town, or city), public or private status, and school type (preschool, primary and preschool, primary, secondary and combined preschool, primary and secondary). Overlap among these schools is common (22% of schools have combined preschool and primary school, while 17% of schools are combined preschool, primary, and secondary). I also added student-teacher ratio. Taken together, these control variables account for the different environments in which principals work, the level of funding for principal supports, and for the size of the faculty as they relate to principal job satisfaction. A relationship between these school-level control factors and principal job satisfaction has been well-established in the literature. In the sample, 34% schools in the sample are only primary schools and 25% are only secondary schools, 78.36% of all schools are public, and 42.29% are in cities of at least 100,000 people. The average student-teacher ratio was 14:1.

Country-Level Variables

School autonomy (Level 2). School autonomy is a country-level indicator of the average proportion of decisions made at the school level of educational governance (against decisions made at the district, state, or country level) in public lower secondary education as determined by the OECD and collected using the Indicators of Education Systems (INES) annual survey. This measures the extent to which countries have centralized bureaucracies at the federal, state,

regional, local, or school level. School-level control ranges from 8% to 92%, with the OECD average of 34%. A full list of these measures can be found in Appendix A.

Country average principal salary (Level 2). To capture country-level investments in school leaders, this study used annual minimum school heads' statutory salaries based on minimum qualification equivalent USD converted using purchasing power parities (PPPs; $19,183 to $85.798).

Country average principals' relative earnings compared to similar workers (Level 2). While salary in PPP is one indicator of renumeration, it does not necessarily capture how much principal work is monetarily valued in the country. This relative income was measured using lower secondary school principals' relative earnings compared to full-time similarly educated workers. This ranges from 0.56 in the Czech Republic to 1.42 in Mexico.

Country average educational spending per student (Level 2). Country means of this country-wide capacity variable was included as a level-two proxy variable to examine whether the national financial resources spent on educational capacity have a relationship with school capacity and individual principals' experiences. Spending per pupil ranges from $2,961 in Mexico to $12,298 in Norway for primary education (In equivalent USD converted using purchasing power parities for GDP of direct expenditure within educational institutions based on full-time equivalents).

Country average educational spending as percent of GDP. While measuring per pupil spending in PPP is a measure of educational spending relative to other countries, an additional indicator, educational spending in lower secondary as a percent of GDP per capita, was used to measure each country's investments in education. These range from 14% in the Czech Republic to 30% in Korea.

The societal value of principal profession (Level 2). One item was used to assess the perceived value of teaching as a profession in the society. An ordinal measure is used to assess whether respondents "strongly disagree," "disagree," "agree," or "strongly agree" with the statement: "I think that the teaching profession is valued in society." Country-level averages of this item were created, with high variation across the countries in the database. For instance, more than half of principals in Viet Nam strongly agreed that teaching is valued in their society, while in Spain, only one percent of principals responded this way. This item helps capture variations in societal norms and appreciation for educators.

Analytical Approach and Modeling Strategy

Hierarchical linear modeling was employed to explore within and between-country variance in principal job satisfaction. Principals are nested in countries with one principal per school. Analyses was done in Stata 15. The following section outlines the model-building procedures and decisions.

Multiple Imputation Strategy

Not every principal had complete information on these explanatory and control variables. List-wise deletion of principals missing any variables in the analysis of the study would have resulted in limiting the sample to 56% of the original principals in the dataset. Furthermore, 6.70 of the variables were missing in the dataset. Therefore, multiple imputation (MI) was used for approaching missing data.

Stepwise multiple imputation by chained equations used inverse estimated country-level response rate and the principal sampling weight as the missing mechanism variables. The country-level response rate was chosen to represent a quality indicator for the fidelity of administering the TALIS survey in each country. Response rates and principal survey weights

are available in the TALIS 2018 technical manual (TALIS-OECD, 2018). With a missing fraction of less than 30%, 10 imputations have a relative efficiency of 98.5% (Rubin, 1987). A single version of the completed MI data was used to perform the preliminary analysis: reporting descriptive statistics, building models, and testing goodness-of-fit. Final explanatory results use Rubin's rule results from all the multiple imputation estimates (*mi estimate, cmdok: mixed*) (Rubin, 1987).

Hierarchical Linear Modeling Strategy

Correlation tables for the variables of interest were run to examine initial relationships in the data (Tables 8-10). To test for multicollinearity between independent variables, also created single-level regression models containing the variables of interest from which I calculated the variance inflation factor (VIF). Next, I used two-level hierarchical linear modeling (HLM) to estimate the model predicting principal job satisfaction. The principal-level analysis estimated parameters that describe the association between various variables and job satisfaction within each country at the individual principal-level. These parameters depicting the intercept and slope estimates became the dependent variables for all higher-level analyses that examined the role of the country-level variables. Significant coefficients on predictors of the intercepts and slopes were examined to provide evidence of cross-level relationships. Moderators were also explored at this stage.

Centering Strategy. For ease of interpretation, the principal-level variables were centered at the group mean (country mean) before being entered into the analytic models (centering within clustering, or CWC) so each of these effects captured the difference in job satisfaction between variables that are higher or lower than the country average. Group-mean centering changes the interpretation of the slope and the intercept parameters. However, Kreft,

Leeuw, and Aiken (1995), Raudenbush and Bryk (2002) and more recently, Enders and Tifighi (2007) note that centering within cluster introduces errors in the between-country-estimates because it assumes that all groups have the same mean on the predictor. They suggest reintroducing centering around group means (beginning at Model 8, noted as "mean") back into the model at level-2 to correct this error and to examine contextual effects, the difference between the within-country and between-country effects on job satisfaction. This method is widely used in organizational research (Enders & Tofighi, 2007). School and principal control data was not centered since they were already in meaningful metrics.

HLM Model. To understand the relationship between demands and resourcing on job satisfaction, I ran multiple HLM models. For ease of interpretation, I include below a single model upon which additional models was subtracted or added. These additional models are discussed below. This model includes a random intercept that allows job satisfaction to vary across countries *j.* The level-1 (principal) and level-2 (country) models are reported below:

$$Y_{ij} = \beta_{0j} + \beta_{1j\ldots11j}(X_{ij} - \overline{X_{.j}}) + \beta_{12j\ldots17j}X_{ij} + r_{ij} \qquad r_{ij} \sim N(0, \sigma^2)$$

$$\beta_{0j} = \gamma_{00} + \gamma_{01}\overline{X_{.j}} \ldots_{11} \overline{X_{.j}} + \gamma_{18} + \gamma_{19} + \gamma_{20} + \gamma_{21} + \gamma_{22} + u_{0j} \qquad Var(u_{0j}) = \tau_{00}$$

$$\beta_{1j} = \gamma_{12} + u_{12j} \qquad Var(u_{1j\ldots}) = \tau_{11\ldots}$$

$$\vdots \qquad \text{Cov}(u_{0j,} u_{1j}) = \tau_{01\ldots}$$

$$\beta_{17j} = \gamma_{17} + u_{1j}$$

Where γ_{ij0} represents the mean level of job satisfaction for principal *i* in country *j*. Next, γ_{00} represents the average principal job satisfaction in each country. $\gamma_{01j\ldots11j}$ represents the associations of group-mean centered $(x_{ij} - \overline{x_{.j}})$ demand or resources variables on job satisfaction. To estimate both a within-group and between-group effect $\gamma_{01}\overline{x_{.j}} \ldots_{11} \overline{x_{.j}}$, an extra country-level parameter representing the grand mean for each demand or resource variable for

each country, is added back into the models. γ_{18} through γ_{22} represent the effects of additional country-level data on job satisfaction. $\beta_{12j\ldots17j}X_{ij}$ represents school and principal control variables on job satisfaction.

During the model build-up process each added covariate in the models was compared via log-likelihood (LR) tests to the model without the individual covariate. The LR test uses the Chi-square distribution and the difference in degrees of freedom between the null and alternative model to examine whether the alternative model has a better fit than the null model. I evaluated the added explanatory value of each model using the proportion of variance accounted for (pvaf) (Raudenbush & Bryk, 2002). I used the full information maximum likelihood estimation (FIML/FEML) for the variance components since this method produces less biased errors and is a more appropriate method for large databases (Raudenbush & Bryk, 2002). Both Bayesian information criterion (BIC), which penalizes models with larger numbers of parameters, and Akaike's information criterion (AIC) were used to compare models alongside the LR test. These tools were used to answer my six research questions.

Research Question 1. *To what extent does principal job satisfaction vary within and across countries?*

Hierarchical linear modeling requires pre-requisites before testing specific hypotheses from the research questions and before probing moderating effects. These requirements were investigated using an initial null or unconditional model. Since this study investigated the extent to which principal job satisfaction is associated with principal-level and country-level variables, HLM requires at least a 5% variation in job satisfaction between countries (Raudenbush & Bryk, 2002). The null model partitions this variance into intraclass correlations (ICC). This null model, using this Satisfaction scale, found an ICC of 6.7%. This represents the proportion of observed

variance that is between countries. This ICC is evidence that hierarchical linear modeling is justified.

Research Question 2: *Which school resources are positively associated with job satisfaction and which school demands are negatively associated with job satisfaction?*

Using a build-up procedure, I ran two separate models. I first examined the relationship between demands and job satisfaction and then I ran a second model to examine the relationship between resources and job satisfaction. These models include control variables but do not include country-level variables nor do they include country-level contextual variables that are examined later. I added each variable individually and used the LR, BIC, and AIC to examine if they contribute to the model. Variables that do not contribute to the model were removed to create a parsimonious model. I hypothesized that results from these model fit tests would support removing some variables from the model. Variables that were removed were recorded and discussed in Chapter 6. I also tested these models with fixed or random slopes. If between-country intercepts and slope variances were significantly different from zero, a final set of models would then examine an intercepts-and-slopes as outcomes model. However, I hypothesized that adding random slopes to demands and resource variables would not improve the model.

Research Question 2 Model Plan

Models	Model 1	Model 2	Model 3	Model 4
Resources	Unconditional model	+ Resource variables	+ Control variables	+ Test random effects
Models	Model 1.1	Model 2.1	Model 3.1	Model 4.1
Demands	Unconditional model	+ Demand variables	+ Control variables	+ Test random effects

Research Question 3: *Do the hypothesized job demands and job resources variables fit into unidimensional demands and resources factors and do they form scales?*

Exploratory factor analysis and confirmatory factor analysis (CFA) were used to estimate and test measurement models incorporating all indicator variables for the job demands construct and indicator variables for the job resources construct. EFA was used to initially explore whether these factors "go together" (Yong et al., 2013, p. 80). Then both EFA and CFA were used to examine whether these factors loaded unidimensionally onto the demands and resources constructs, respectively, and whether they could form subscales. This also tested the JDR framework. If the factors loaded onto only one dimension (with high factor scores and various signs depending on the coding direction), this would suggest that the bifurcation between demands and resources is not as unambiguous as the foundational literature suggests. After conducting this analysis, these subscales were then tested for moderating effects.

CFA was conducted because the jobs demands resources theory already provides an a *priori* model regarding relationships between factors (Bandalos & Finney, 2018). Furthermore, the limited number of demands and resources within the TALIS 2018 survey are pre-specified, suggesting CFA to be preferred over EFA (Bandalos & Finney, 2018). Additional preliminary steps suggest that CFA is an appropriate method to examine TALIS data. TALIS 2018 comprises a large enough sample size that is required to complete factor analysis, even at the most conservative sample to variable ratio of 20:1 (Hogarty et al., 2005). Principal components analysis was used as the default extraction method (the process through which the parameters of the factor solution are estimated) to reduce the demands and resources into factors (using the STATA *factortest* package). Oblique rotation is preferred in the social sciences and was used to rotate the model and re-examine results (Bandalos & Finney, 2018). Results reported chi-squared

test, degrees of freedom, and the *p*-value for the model fit. A root mean square residual of 0.08 or less was considered to be good fit (Bandalos & Finney, 2018). The comparative fit index tested these models against a null model that suggests no correlation among variables, with 0.95 or above as indicating enough evidence to reject the null (Bandalos & Finney, 2018). Any areas of misfit, as indicated by large residuals, was reported and used to diagnose the models.

Since JDR suggests that demands and resources span wide domains, and since the operationalization of demands and resources in the TALIS 2018 survey span a wide variety of domains, it was possible that items were multidimensional. Items may represent a number of smaller domains. These nested models were compared using chi-squared tests and AIC. Bandalos and Finney (2018) warned against trimming the model to increase fit within CFA since the model will no longer align with theory but will be data driven. However, this dissertation aims to test the buffering hypothesis and, therefore, attempted to find a model that is of quality (as indicated by percent of explained variance and omega (Bandalos & Finney, 2018)) even if this model did eliminate pre-determined factors.

Research Question 4: *How does the level of school resources moderate the relationship between school demands and principal job satisfaction? To what extent is this hypothesized relationship stronger for principals who report lower levels of resources, compared to those who perceive higher levels of resources?*

The JDR buffer hypothesis suggests that additional resources can moderate the relationship between demands and job satisfaction. This moderating relationship is, therefore, a same-level interaction. To probe this moderating relationship, Model 5 added the unidimensional demands and resource factors from the confirmatory factor analysis into an HLM model with a demands x resources moderating variable. As set out in the proposal stage, I noted that, if this

value was statistically significant, values from the covariance matrix of coefficients from the model would be inserted into an online tool designed to detect and describe moderating effects. The online Preacher input calculator for simple intercepts, simple slopes, and regions of significance in HLM 2-way interactions would further describe the relationship (Preacher et al., 2006). If the moderator was significant, I would set Models 6 and 7 to values of the resources moderator as low and high, respectively. Preacher and colleagues (2006) note that any pair of moderator values can be used, but they recommend using either the lower and upper observed values of the moderator, the lower and upper possible values of the moderator, or one standard deviation below and above the mean of the moderator. I chose the minimum and maximum of resources to be more interpretable and to better reflect the data.

Research Question 4 Model Plan

Model 5	Model 6	Model 7
+ Demands and Resources factors from CFA + Control variables	Center resources at a low conditional value	Center resources at a high conditional value

Research Question 5: *To what extent does the relationship between demands and resources on job satisfaction vary within-country and between countries? What might explain these contextual differences?*

To examine contextual or compositional effects, the eighth and ninth models included both clustered within-group and grand-mean-centered school climate variables within the contextual effects framework (Raudenbush & Bryk, 2002). Model 8 examined demands and Model 9 examined resources. I added back centering around the grand mean (CGM) at level-2 to examine the compositional effect—the difference in job satisfaction we would expect between two principals with the same individual demands or resource variables who lead in countries

differing by one unit in that demands or resources variable. We would observe a contextual effect if the relationship is stronger at the country level than at the individual level. For instance, suppose the demand γ_{10} (*mean school danger*) is the country-level effect of school danger on job satisfaction, controlling for other individual-level demands and resources (holding the individual school danger measure constant). The γ_{01} coefficient (*school danger*$_{cwc}$) is the individual-level effect of school danger measure on job satisfaction, with country-level school danger partialled out. If both effects are significantly different from zero, then γ_{10} is the expected change between the means of two countries for every one-unit difference in mean danger. The γ_{01} coefficient is the expected change in job satisfaction between two principals in the same country who differ by one unit on danger. These results would suggest a contextual effect; the country-average perceived danger of schools is a stronger predictor of job satisfaction than individual principal perceived danger. Model 10 attempted to examine contextual effects by adding demands, resources, and control, and contextual effects into a single model.

Research Question 5 Model Plan

Model 8	Model 9	Model 10
Resources + contextual resource variables	Demands + contextual demands variables	Demands, resources, and control variables + demands and resources contextual variables

Research Question 6: *How do country level investments in education change the relationship between demands and resources on job satisfaction? How is this subsample of OECD countries different from the larger sample? How does the United States compare to these other countries?*

Six measures of educational resources were used to operationalize country-level educational resources relevant to school principals and school climate. These measures were

derived from the OECD's Education at a Glance handbook for 2018. Given the importance of autonomy to job satisfaction (see Chapter 2), autonomy was included in country-level variables. Autonomy was gauged using a measure of the percentage of decisions made by individual schools (against central, state, regional, or local actors) in lower secondary education. The literature review in Chapter 2 also found consistent relationships between salary and job satisfaction. Two variables were included to examine both absolute income and relative income. Absolute income was measured using a measure of school lower secondary principals' statutory salaries, based on minimum qualifications. Relative income was measured using lower secondary school principals' relative earnings compared to full-time similarly educated workers. Similarly, two country-level variables captured country-level absolute and relative spending on educational resources. The first measured country average educational spending as a percent of GDP. The second measured annual expenditures per student on all education in equivalent U.S. dollars using purchasing power parities (PPP). Taken together, these measures can capture the relationships between country-level resources and job satisfaction. While the OECD does collect additional country-level indicators, these indicators are not associated with principal job satisfaction as identified in the literature review. A country average TALIS 2018 indicator of the societal value of the principal profession was also added at this stage to examine the relationship between perceptions of job prestige and job satisfaction.

Not all countries from the TALIS 2018 participated in the OECD's Education at a Glance project. Fewer than half the countries in TALIS 2018 reported Education at a Glance 2017 indicators. Furthermore, not all countries that reported Education at a Glance indicators reported on *all* above indicators. Only 28 countries who participated in both TALIS 2018 and the Education at a Glance 2017 had complete data. Imputation on level two data is controversial

(Rubin, 1987) and I therefore only used countries that have complete Education at a Glance indicators of interest. This final research question was, therefore, answered using a subsample of the TALIS 2018 countries. A section in Chapter 5 notes the differences between the samples. The country-level Education at a Glance indicators was merged with TALIS 2018 survey data using country identification (ID). Each principal had the same country identification value for level two variables while retaining their own answers to the principal surveys.

Five models were used to examine country-level inputs. Because I used a subsample, I began by examining an unconditional model. Model 12 added the resources or demands variable. Model 13 added control variables while Model 14 added the aforementioned country-level resources. I added each individually and used LR tests, BIC, and AIC to compare nested models. Variables that do not add to the model were left out. Model 15 added contextual variables using the framework noted above. I first reported the relationships between country resources in education and job satisfaction. Results from these subsample models were also compared to those from the inclusive TALIS models. I reported the proportion of variance accounted for (PVAF) by comparing the final model to the baseline model. During this stage, I also tested whether alternative country-level groupings support better model fit and more precise parameter specifications. This sensitivity analysis examined whether adding region (North America, South America, Western Europe, Eastern Europe, Asia, Middle East, Oceana) or GDP (using quartile cut points) reduced variation in the model. Whether the model fits and parameter specifications remain constant when this variation in the data are controlled for determined how sensitive our model was to changes in the data (Raudenbush & Bryk, 2002).

Research Question 6 Model Plan

Models	Model 11	Model 12	Model 13	Model 14	Mode 15

Resources	Unconditional model	+ Resource variables	+ Control variables	+ Contextual variables	+ Country level resources
Models	Model 11.1	Model 12.1	Model 13.1	Model 14.1	Model 15.1
Demands	Unconditional model	+ Demand variables	+ Control variables	+ Contextual variables	+ Country level resources

I also ran a separate model using data from just the United States. Previous sections discussing the problem of U.S. centric research notwithstanding, the majority of research on principal job satisfaction has taken place in the U.S. It was therefore important to examine the U.S. results against the collective literature in this area. This dissertation adds clarity to the literature on inconsistent predictors of job satisfaction and add additional support for consistent predictors of job satisfaction.

Chapter 4: Results for Models Predicting Job Satisfaction and Factor Analysis

This chapter investigates the first four research questions: first, I examine variation in principal job satisfaction within and across countries; second, I identify which school resources are positively associated with satisfaction and which demands are negatively associated with satisfaction. I next examine the third research question, testing whether and how demands and resource fit into scales. I finish the chapter by examining the fourth research question, which tests those scales. The first research question justifies the use of hierarchical linear modeling, while the second question paints an initial picture of the relationships between the variables of TALIS 2018 database. This was the first step in identifying the organizational factors that are associated with the outcome measure. The third and fourth questions test the theoretical frameworks set up in previous chapters through factor analysis and testing moderating effects. A foundational understanding of the relationships between these factors allows for more complex modeling in the next chapter that incorporates results from the factor analysis and country-level contextual variables.

Descriptive Statistics

Descriptive statistics provide a first look into the reported job satisfaction of principals. A full accounting of these statistics across 48 countries is provided in Table 5 for continuous variables and Table 6 for categorical variables. On average, across all countries, principals tend to be in city-located public primary schools with a student-teacher ratio of 14:1, a teacher-manager ratio of 6:1, and a teacher-support personnel ratio of 16:1. Forty-four percent of schools have between one and ten percent of students classified as low income; 40% report between one and ten percent of students as non-native, and 66% report between one and ten percent of

students classified as special needs. Average teacher turnover hovers around nine percent of staff members per year. Thirty four percent of schools never receive any external evaluation.

On average, across all countries, principals tend to be male with a master's degree, 18 years of teaching experience, and six years of principalship experience at their current school. The average principal spends 27% of their time on administrative tasks, has experienced 6 types of professional developments per year, and reports few barriers to these experiences. The average principal reports low stress, low student safety issues, and low teacher turnover. Most principals do not report a shortage of materials or teachers. They report satisfaction with pay and benefits. Furthermore, the average principal reports high levels of school trust, collaboration, distributed leadership, and organizational innovation. Given these contexts, it is unsurprising that the average weighted job satisfaction score is 9.58 out of a possible total of 12. Average principal job satisfaction ranges from 8.10 in Japan to 10.83 in Columbia, with all country results reproduced in Table 11. Ninety percent principals in the dataset "agree" or "strongly agree" with the statements about job satisfaction at their schools. These initial results complicate a popular narrative of principals as unsatisfied with their work and under high levels of stress and pressure, as noted in the literature in Chapter 2. In aggregate, principals report widespread positivity in relation to schools, resources, teachers, and students. These findings will be discussed in greater depth in Chapter 6.

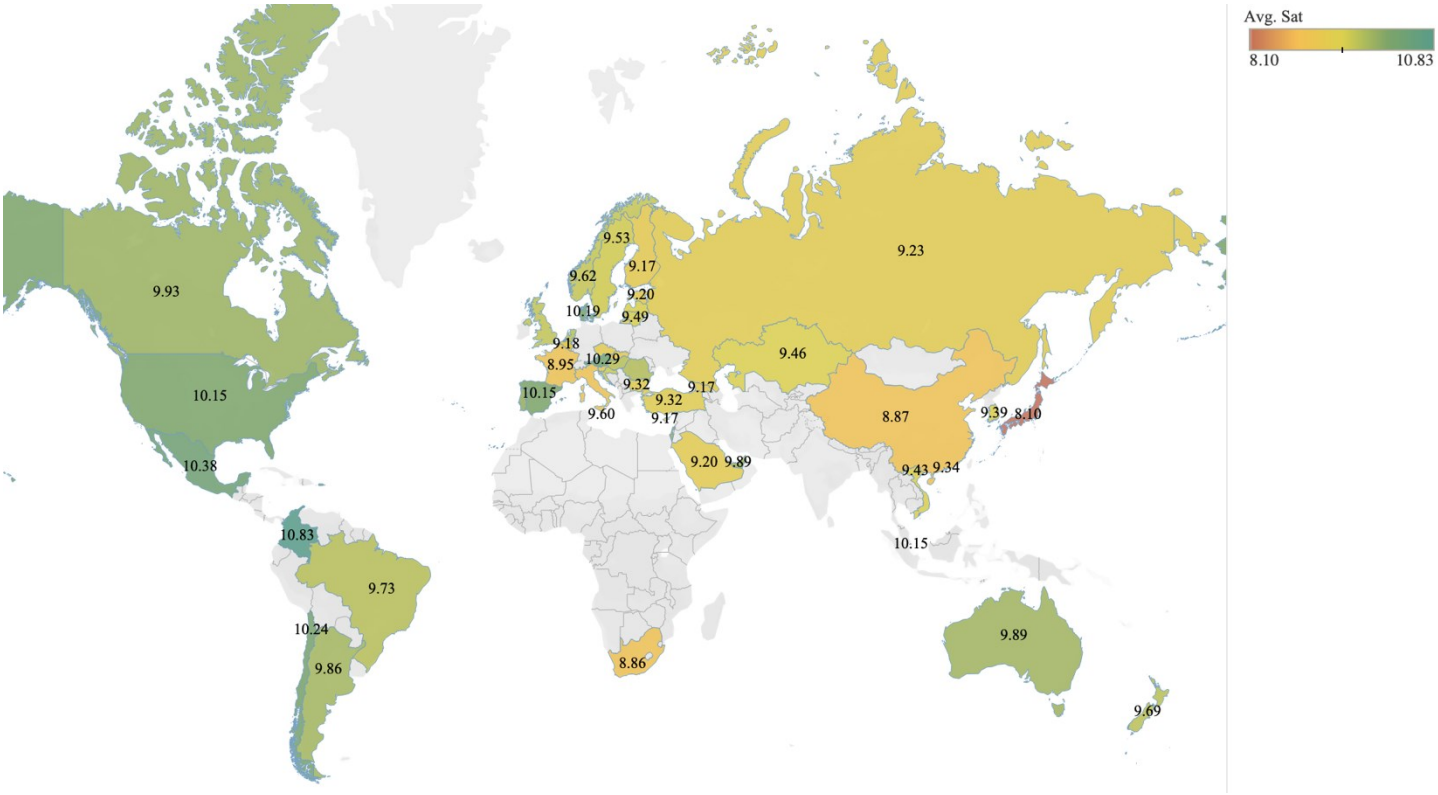


Figure 2. Average Job Satisfaction by Country.

For ease of interpretation, I created three correlation matrices that can be found in Tables 8, 9, and 10. Each table reports correlations between the dependent variable and control, demands, and resource variables, respectively. Variables are presented before group mean centering. These findings show mostly very weak and weak relationships between job satisfaction and the variables of interest, save for a moderate positive correlation between satisfaction with the school and satisfaction with the profession ($r = 0.48$). Again, correlations amongst independent control, demands, and resources variables were very weak to weak, with a few expected moderate relationships within control variables. A moderate relationship exists between autonomy for staffing and autonomy for budgeting ($r = 0.54$) and between satisfaction with benefits and satisfaction with salary ($r = 0.53$). While most of the correlations in Tables 8,

9, and 10 are significant ($p < 0.01$), these do not imply meaningful significance, especially given the size of the dataset.

To test for multicollinearity between the independent variables of interest, I created a single-level ordinary least squares regression model with all the variables of interest. I calculated a variance inflation factor (VIF) for each variable in the model to examine how much of the variance of the estimated regression coefficients can be attributed to collinearity. Allison (1998) suggests that only a VIF above 2.5 is flag for probable multicollinearity. All the variables reported factors of less than 2.5, with the largest VIF of 1.85 (autonomy for staffing).

Graphing the residuals versus the fitted predicted values indicates a slight pattern of heteroscedasticity, a systematic change in the variance of residuals over the range of values of job satisfaction. There is enough evidence in the Breusch-Pagan test ($\chi^2 = 270.80$) to reject the hypothesis that the variance of the residuals is homogenous. This analysis therefore used the Stata linear mixed-effects modeling (*mixed*) to model and correct for this heteroscedasticity within the HLM framework. I also estimate using maximum likelihood estimations.

Models 1 – 4

This section reports results from the first four models for job resources (Table 12, Models 1-4) and job demands (Table 13, Models 1.1-4.1). These models examine the first two research questions, namely, how job satisfaction varies within and across countries and the relationship between job satisfaction and resources and demands when controlling for school and principal variables. A null model was used to calculate the ICC for principal job satisfaction to determine the proportion of the variance attributable to country variance. The data was nested, with 15,458 principals in 48 countries. Six percent of the variance in job satisfaction in the TALIS 2018 sample is attributable to countries. The ICC was significant ($p < 0.001$), providing a rationale for

the use of hierarchical linear modeling to investigate additional models. The reliability for the null model was 0.83 (using the average number of observations per country of 83) indicating consistent and reliably different country job satisfaction means (Raudenbush & Bryk, 2002). This confirms the hypothesis of Research Question 1.

I next added demands and resources to the null model. Model 2 added the resource variables while Model 2.1 added the demand variables. For all these models, key predictor variables were centered for ease and meaningfulness of interpretation (Chapter 3 discussed these decisions in greater detail). These models move from the aforementioned null to adding the individual predictors (random-intercept model), to adding control variables variable, to allowing slopes to randomly vary (random-intercept and random slope model). Testing random-intercept and random slope models supports the comparative research framework suggested by Adler (1983) by attempting to model country-level differences. After building the models, I also completed a tear-down method to confirm that removed variables did not contribute to the fit of the models.

Resource Models

I used the buildup procedure discussed in Chapter 3 to craft the initial resources models (1 - 4). During this build-up process, each added covariate was compared via log-likelihood (LR) tests to the model without the individual covariate. Results of these resource models are produced in Table 12. During this process I dropped the school management team variable (teacher-leadership ratio) as it was not significantly associated with job satisfaction and did not contribute to a stronger model fit. I similarly dropped school staff resources (teacher-support) as it too was not significant and did not contribute to stronger model fit. School autonomy for both budgeting and staffing, though tested separately, were similarly not associated with job

satisfaction and did not contribute to the model fit and were dropped. This was a surprising finding given the literature in Chapter 2. This will be discussed in greater depth in Chapter 6.

Resources Model 2 predicted that a principal with all their resources variables at their country-average will score 9.55 (γ_{00}). γ_{00} was significantly different from zero ($p < 0.001$). All resources variables were determined to be significant ($p < 0.001$). This model predicts that, for instance, an average principal with a one-unit higher distributed leadership score than their country-level average score is predicted to score 0.06 points more in job satisfaction than their peer with the country-level distributed leadership score. This model suggests that a satisfaction with benefits and satisfaction with the profession are stronger predictors of job satisfaction than school salary (same scale for principal resources). This also suggests that school innovation is a stronger predictor of job satisfaction among school resources variables (same scale). Because centering within clustering (CWC) removes all between-cluster variation from the school climate predictor yielding "pure" estimates of pooled within cluster coefficients (Enders & Tofighi, 2007, p. 129), the constant remained the same between Model 1 and Model 2. School resources variables explained 35% of the variance at the principal level but none at the country level. An LR test indicated that there is enough evidence to reject the null hypothesis that Models 1 and 2 are equal. Model 2 is an improvement over Model 1 ($\chi^2 = 6591.13$, $df = 8$, $p < 0.001$).

Model 3 added principal and school control variables. I added each control variable individually and found that principal years of experience in teaching and education was not associated with job satisfaction and did not contribute to model fit. While suburban and rural dummy variables (against the reference category of urban) were associated with job satisfaction, dummy variables for school type were not associated with job satisfaction. Student teacher ratio and public-school status were also not associated with job satisfaction. Since school type

contained overlapping schools (some schools contained both primary and secondary) I tested a number of different iterations of school type, including just secondary, just primary, majority secondary and majority primary. My results were similar for all combinations. These findings will be discussed in Chapter 6. All resource variables were still significant in predicting job satisfaction after adding in the chosen control variables. This model also predicted that *ceteris paribus* female principals report higher job satisfaction (0.09, $p < 0.01$) and that each additional year in the principalship of a school increases job satisfaction by 0.02 ($p < 0.001$). This model predicted that *ceteris paribus* principals in schools with higher urban density report higher satisfaction ($p < 0.01$).

Model 4 tested an intercept and slopes as outcome model, or whether allowing slopes to randomly vary by country improved the model fit. I tested each resources slope separately and then added significant slopes together. Only three slopes improved model fit. Model 4 allows the slopes of salary, benefits, and satisfaction with the profession to vary by country. However, significant differences in country means remain ($\tau_{00} = 1.90$). Furthermore, random slopes poorly explain the variability in the effect of salary, benefits, and satisfaction with the professions given that the variance of all indicators were very small, (τ_{01}-$\tau_{03} < 0.00$) and the confidence interval of the covariances, τ_{01}-τ_{03} , may, in fact be zero. This was weighed against AIC and BIC scores which decreased with this model after adding more parameters and an LR test result comparing Models 4 and 3 indicates that this model does improve the fit (χ^2=245.88, df=9, $p < 0.00$). That the value of the variance of the intercept (to explain the variance in job satisfaction between countries) increased between the modes and the possible zero values for confidence intervals suggests that this model was unstable (Bell et al., 2019). A more parsimonious model should be adopted. Given the chosen resource predictors from the data as informed by the literature, Model

3 was the best fitting in showing the relationship between resources and job satisfaction after controlling for school and principal variables.

Demands Models

I completed the same process for the demands variables (Models 1.1 - 4.1). I ran the same null model and then compared each added variable to the previous using LR tests. Results of these demands models are produced in Table 13. I began with examining each demand individually for Model 2.1. During this process I dropped the shortages of materials variable as it was not significant and did not improve the model. Similarly, I dropped the student immigrant, SES, and special needs variables as they too were not significant and did not contribute to the model fit. However, these variables were included in factor analysis, as will be discussed. Despite dropping these variables, the findings of this model fill a hole in the literature as the significance of these variables has yet to be confirmed in the literature. Again, this will be discussed in greater depth in Chapter 6.

Demands Model 2.1 predicted that a principal with all their demands variables at their country-average will score 9.55 (γ_{00}). The γ_{00} coefficient was significantly different from zero ($p < 0.001$). All resources variables were determined to be significant ($p < 0.001$). This model predicts that, for instance, an average principal with a one-unit higher barrier to PD score than their country-level average score is predicted to score 0.32 points less in job satisfaction than their peer with the country-level barriers to PD score. For principals reporting the sample's average administrator time (27%), we expect their job satisfaction score to be lower by 0.11 than their country-level peers with their country-level average scores. Similarly, for principals reporting the average level of principal stress (9.9) we expect their job satisfaction score to be lower by 0.80 than their country-level peers with their country-level average scores.

Interestingly, the proxy variable accountability was positively associated with job satisfaction. Here too, CWC removes all between-cluster variation from the school climate so the constant remained the same between Model 1.1 and Model 2.1. Demand variables explained 8% of the variance at the principal level but none at the country level. An LR test indicated that there is enough evidence to reject the null hypothesis that Models 1.1 and 2.1 are equal. Model 2.1 is an improvement over Model 1 ($\chi^2 = 6591.13$, $df = 8$, $p < 0.001$).

Model 3.1 added principal and school control variables. I examined the added explanatory power of each control variable individually and found that the results mirrored model 3 as to which variables were retained in the model. All resource variables were still significant in predicting job satisfaction after adding in the control variables. The effect school average turnover on job satisfaction was attenuated between Model 2.1 and 3.1. This suggested that the effect of turnover on job satisfaction, controlling for individual-level effects (holding the individual principal resources constant) becomes weaker after considering individual principals' schools and individual backgrounds. Like the resources model, the demands model also predicted that *ceteris paribus* female principals report higher job satisfaction (0.09, $p < 0.01$), that each additional year in the principalship of a school increases job satisfaction by 0.06 ($p < 0.001$), and that principals in schools with higher urban density report higher satisfaction ($p < 0.01$).

Model 4.1 tested an intercept and slopes as outcome model, or whether allowing slopes to randomly vary by country improves the model fit. I tested each demands slope separately and then added significant slopes together. Only two slopes improved model fit. Model 4.1 allows the slopes of violence, and barriers to PD to vary by country. After controlling for school demands and control variables, country-level violence has a negative effect of -0.12 on the effect

of individual violence on job satisfaction. The intercept and slope of violence have a negligible negative correlation of -0.05 across countries. The variance of turnover, however, was positive 0.35, suggesting variation in the effect of turnover on job satisfaction by countries. While AIC and BIC scores decreased only slightly, an LR test result comparing Models 4.1 and 3.1 indicates that this model does improve the fit (χ^2=28.72, *df*=4, *p*-value=0.00). The strongest demands model, Model 3.1, explained 9% of the variance in job satisfaction at the individual level and, like the resources model, none of the variance at the country level compared to the null model.

The hypotheses of question 2 were mostly confirmed. School resources were associated with increased job satisfaction, but not associated with principal autonomy, school staff, and management teams ratios. School demands were associated with decreased job satisfaction, save for the shortages of materials variable and SES, non-native students, and special needs students variables that were not significantly associated with dependent variable. Importantly, this model found that the proxy variable for accountability was associated with higher job satisfaction, the opposite of the hypothesized direction. Despite this, these initial findings confirm the direction of the associations noted in the review of the literature. This indicates that more complex modeling and model testing should proceed.

Factor Analysis

To provide empirical validation for the job demands resources framework and to explore my hypotheses, I utilized factor analysis, including exploratory factor analysis (EFA) and, later, confirmatory factor analysis (CFA). The goal of this analysis was to reduce the many demands and resource variables into unidimensional groups to then examine the moderating hypothesis of the job demands resources theory (RQ 4). EFA was first used to explore whether similar core dimensions of job demands and job resources found in this dissertation's literature review would

be evident when these factors were measured empirically. EFA is used in general research to explore whether relationships exist between the observed variables and unobserved latent factors (Tabachnick et al., 2007; Yong et al., 2013), in this case, hypothesized demands and resources. For instance, do the variables of school delinquency, barriers to professional development, or shortages of materials (among other factors) form a parsimonious scale that measures job demands? Similarly, do the variables of distributed leadership, collaboration, or professional development opportunities (among other factors) form a parsimonious scale that measures job resources? I conducted this analysis at this point in the dissertation because all the moderating variables are on the principal level. This analysis therefore came before more complex multi-level modeling that I conducted in chapter 5.

To prepare my models for EFA analysis, I first standardized all the variables, both continuous and ordinal, given the different scaling of the variables. I also used an MI model to prevented overestimation (Tabachnick et al., 2007) and used a different MI model than CFA models to compare results. Before beginning EFA models, I ran Bartlett's test of sphericity to ensure that the variables were orthogonal such that factor analysis can compress the data in a meaningful way. My sample met this criterion (p <0.00) given the preferred cutoff (p <0.05), indicating that factor analysis may be useful within my data (Yong et al., 2013). I also ran the Kaiser-Meyer-Olkin measure of sample adequacy to measure whether the data was suited for factor analysis. My sample also met this criterion (0.71) given the preferred cutoff (0.50) though not in the adequate range (> 0.80) (Yong et al., 2013).

I then tested multiple EFA models through an iterative process, noting four eigenvalues consistently above 1 in the scree plot. I retained a four factor model, rotated the model (oblique), and dropped a number of variables that did not produce factor loadings above 0.40 (Yong et al.,

2013), a more conservative estimate to prevent more subjective interpretation of the models. These dropped variables include administrator time ratio, accountability, stress, school turnover and violence, school support and administrator ratios. I reran the factor model, rotated the model, and produced Table 14. While no items had complex loadings, the final model did not correspond to the job demands resources theory as discussed in Chapter 2. Distributed leadership, trust, innovation, and collaboration loaded onto a single factor (0.42 - 0.58 factor loadings), while student SES, immigrant status, and special education status also loaded onto a single factor (0.46 – 0.56). I did not interpret two additional factors as they did not have at least three variables (Tabachnick et al., 2007). None of the demands variables loaded onto a single factor above the 0.4 factor loading cutoff.

Given these results, I was unable to reduce the many demands and resource variables into unidimensional groups. There was not enough evidence to confirm hypothesis 3. The variables hypothesized to be included under "job resources" (Schaufeli & Taris, 2014) did not load unidimensionally. Similarly, the variables hypothesized to be included in "job demands" (Schaufeli & Taris, 2014) also did not fit load cleanly. These EFA results indicate that performing confirmatory factor analysis to measure whether demands and resources factors form unidimensional scales would yield poor model fits and may not be statistically appropriate (Yong et al., 2013).

That being said, Nosek, Beck, Campbell and colleagues (2019) note the importance of "pre-registering" studies to improve the credibility of research. They implore researchers to note the statistical methods and thresholds researchers will be using in their analysis *before* beginning research, especially when the research involves hypothesis testing and confirmatory research. They note that effective preregistration requires researchers to submit explicit plans before

research begins and then follow through on each planned step during the research process itself. I pre-registered my methods and plans in the dissertation proposal phase. I planned to use CFA because the jobs demands resources theory already provides an *a priori* model regarding relationships between factors (Bandalos & Finney, 2018). Therefore, despite poor EFA results, I wanted to follow current best-practices in scientific research by testing the theoretical model using CFA.

CFA analysis produces standardized factor loadings that show how much or little of the demands and resource variables in each of the constructs contribute to these latent constructs for the TALIS sample. Thompson (2004, p. 4) notes that factor analysis can be used to summarize relationships in the form of a more parsimonious set of factors that can be used in subsequent analysis. I therefore used factor scores and goodness-of-fit indicators to test whether the variables could fit onto a unidimensional construct. Factor values closer to 1 indicate greater representation of the latent construct. The factor loadings would then be used as a scalar, where λ is the standard factor loadings of each variable on the latent demands or resources indicators from the CFA results, such that:

$$Demands/Resources = \lambda_1(Indicator\ variable\ 1) + \lambda_2\ (Indicator\ variable\ 2)\ \ldots$$

Using a single version of the completed MI data (different from the dataset used in my EFA analysis), I examined factor and score reliability using the fit indices noted in Chapter 3. I started with a single facto model for resources, with the resource variables for the latent construct of "resources." These models did not achieve the cutoffs for goodness of fit (CFI = 0.42, RMSEA = 0.13, SRMR = 0.10). The same pattern held for a single factor model for demands, with demand variables for the latent construct of "demands." These initial models did not achieve the cutoffs for goodness of fit (CFI = 0.48, RMSEA = 0.08, SRMR = 0.07) and all factor

values were below 0.6. Confirmatory factor analysis verified that the demands and resources constructs are poorly defined by unitary constructs.

While the demands and resources variables did not form unitary constructs, the goal of this EFA and CFA evaluation was to reduce the demands and resource variables to examine the buffering hypothesis of the job demands resource framework. In order to probe moderating hypotheses, I attempted separate multifactor models for demands and resources. Using EFA, I first examined job demands. Based on a scree plot of all the demands, I retained a two factor model, rotated the model (oblique), and dropped a number of variables that did not produce factor loadings above 0.40 (Yong et al., 2013), again, a more conservative estimate to prevent more subjective interpretation of the models. I removed the proxy for accountability, administrator time, and turnover (factoring and rotating every time). I also dropped stress and barriers to PD as they did not produce factor loadings above 0.40. One factor contained student SES, immigrant status, SPED status, and violence, which I named "student demands" (CFI = 0.98, RMSEA < 0.05, SRMR = 0.02, $\alpha = 0.62$). The other factor contained shortage of materials and shortage of teachers, which I named "school demands." However, this model was just-identified with zero degrees of freedom (CFI = 1.0, RMSEA < 0.00, SRMR = 0.00) and cannot be assessed. Indeed, as Yong and colleagues note, a two variable factor should not be interpreted unless the variables are highly correlated to each other but not to any other variable, which these are not (r =0.53). I found a single mean-adjusted demands scale to examine moderating variables.

This single scale should not be confused with the discussion of unitary constructs. To be clear, I did not find evidence that the hypothesized demands variables formed a unitary construct. However, I was able to find a scale that I could use to represent some of the demands principals

face in schools. This scale is comprised of student body indicators that theory and previous studies associate with higher job demands: a higher proportion of poor, immigrant, special needs, and violent students. The demands models 1-4 from above showed that, besides for student violence, the individual variables for poor, immigrant, and special needs students were not significant predictors of job satisfaction. However, as the results in Table 16 show, taken as a whole, this student demand scale was associated with lower job satisfaction.

I performed the same analysis on job resources by attempting to find multifactor models through EFA. Based on a scree plot of all the resources, I retained a three-factor model, rotated the model (oblique), and dropped two variables that did not produce factor loadings above 0.40. I removed support and administrator ratio. One factor contained the distributed leadership, trust, innovation, and collaboration variables (described in Chapter 3), which I named "climate resources" (CFI = 0.91, RMSEA < 0.08, SRMR = 0.05, $\alpha = 0.61$), while the second contained satisfaction with benefits, salary, and the profession, which I named "job resources" (CFI = 0.95, RMSEA < 0.02, SRMR = 0.03, $\alpha = 0.60$). A final factor contained two variables—autonomy for staffing and autonomy for budgeting. However, these were not highly correlated (r =0.53) and could not be used in moderation analysis.

Moderation Analysis

To examine whether resources moderate the relationship between job demands and job resources, I used the school demand and resource variables from the EFA/CFA analysis to build a moderating model. The key predictor variables were, again, centered for ease and meaningfulness of interpretation (J. Cohen et al., 2013). This also prevents potential multicollinearity problems (Kreft et al., 1995) This shows the effects for a principal at their own country's mean. I added each variable into the model separately, including control variables. I

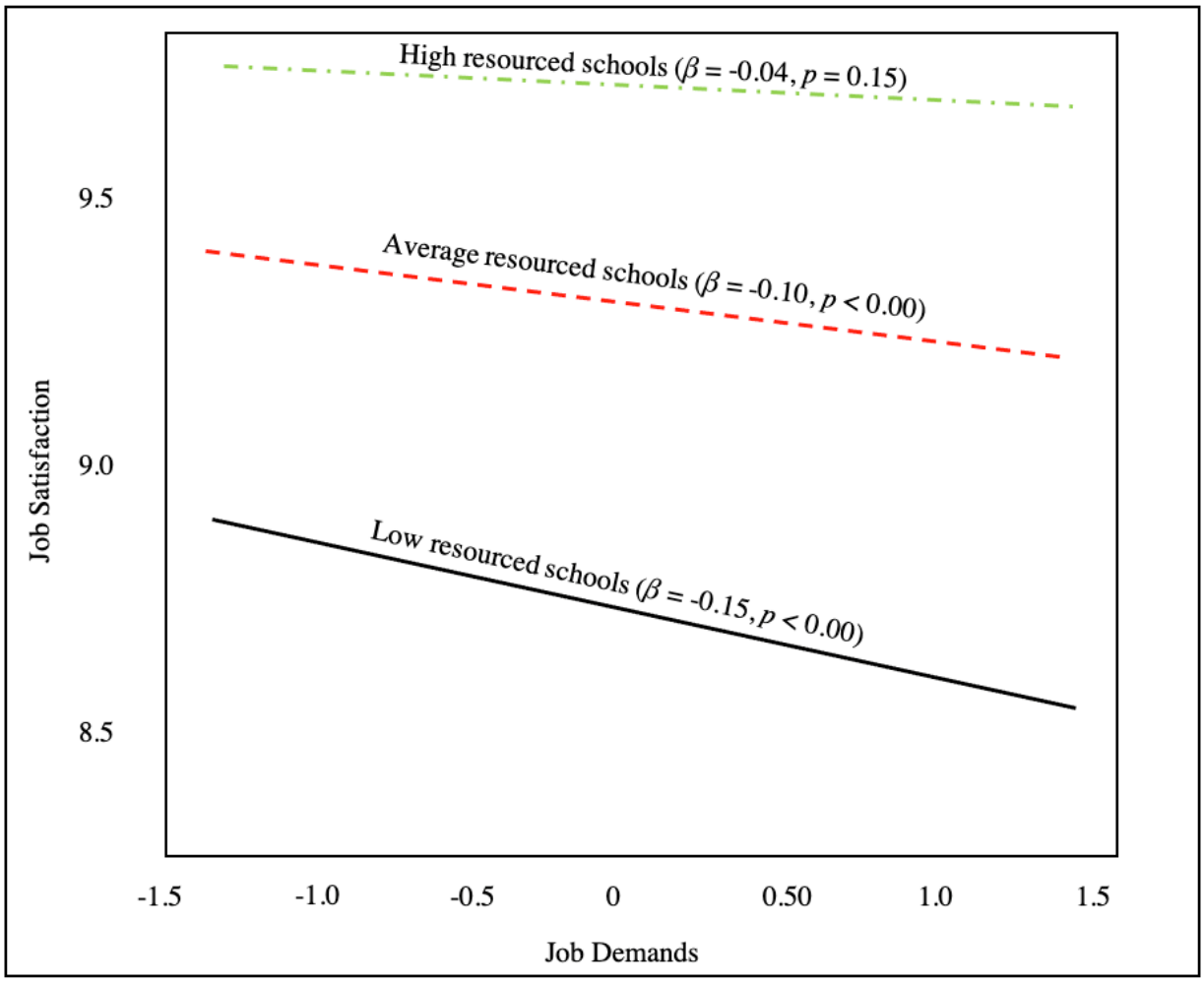
tested each variable (including two and three-way interactions) for added explained variance and improvement in model fit. I also tested whether allowing these predictor variables to randomly vary by country improved the model fit. The best fitting model removed random slopes and kept two interaction terms: *climate resources * student demands* and *job resources * student demands.* Results of this model are reported in Table 17. The model shows that, an average principal with a one-unit higher climate resources score than their country-level average score is predicted to score 0.43 points more in job satisfaction than their peer with the country-level climate resources score. This model suggests that satisfaction with job resources—benefits, salary, and satisfaction with the profession—are predictors of job satisfaction, in addition to school climate factors.

While both moderating variables were significant in the model, I followed Cohen and colleagues' (2013) and Aiken and colleagues' (1991) guidance for post hoc probing of the interactions. According to job demands-resources theory, job resources would buffer the effects of job demands on job satisfaction (Bakker et al., 2005). The two predictors should have the opposite sign such that when they interact, one predictor (resources) weakens the effect of the other predictor (demands) on job satisfaction. In Models 6 and 7, I tested this moderation by adding interaction terms, *climate resources * student demands* and *job resources * student demands*. The interactions between *climate resources * student demands* ($\beta = 0.04$, $p < 0.01$) and *job resources * student demands* ($\beta = 0.05$, $p < 0.1$) were both significant. I therefore probe both interactions using the Preacher interaction tools (Preacher et al., 2006), which provide the significant region of interactions and the test of slopes for conditional values. To examine slopes within different levels of school climate or job resources, I used the conditional values of the mean plus one standard deviation for high school climate or high job resources, the mean of

school climate or job resources, and the mean minus one standard deviation for low school climate or job resources.

Probing the *climate resources * student demands* interaction shows no significant slope (i.e., association between student demands and job satisfaction) for high resource schools (β = -0.04, p = 0.15) but does show significant slopes for schools at the mean of school resources and for schools at one standard deviation below school resources. This effect is graphed in Model 6, with the green, dashed and dotted line showing high resourced schools (β = -0.04, p = 0.15), the

Model 6.
*Climate Resources * Student Demands Interaction*



Notes. Alpha = 0.5. Top green dashed and dotted line showing high resourced schools (β = -0.04, p = 0.15). Middle red dashed line showing average resourced schools (β = -0.10, p < 0.00). Bottom solid black line showing low resourced schools (β = -0.15, p < 0.00).

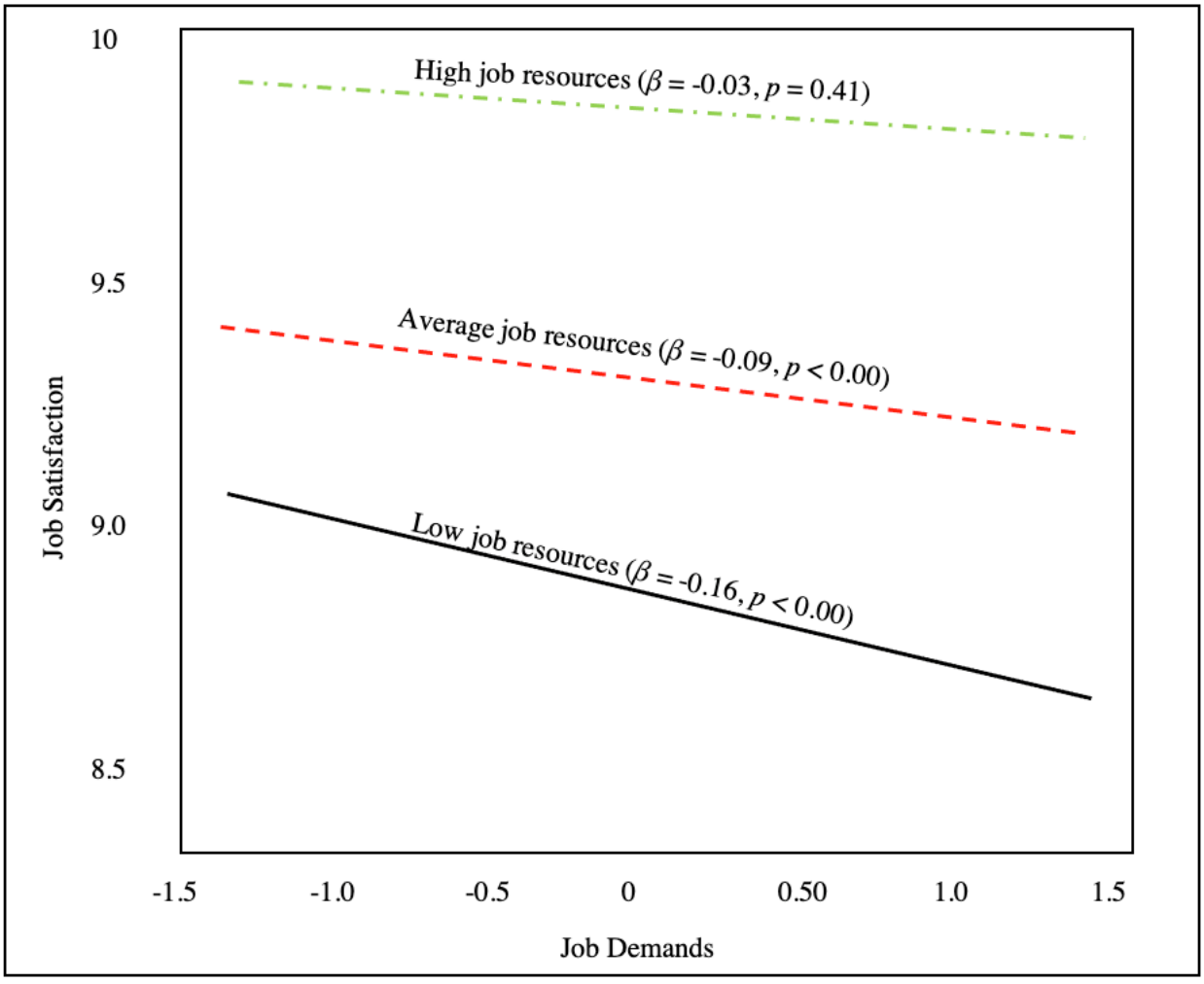
red dashed line showing average resourced schools (β = -0.10, $p < 0.00$) and the solid black line showing low resourced schools (β = -0.15, $p < 0.00$). The region of significance for this interaction is below a mean of 1.1 or above a mean of 5.8 of resources (*outside* the region). School resources buffers the relationship between school demands and job satisfaction for schools below mean school resources of 1.1 and the effect becomes stronger for schools with lower levels of resources. This supports this dissertation's moderation hypothesis and provides evidence for the JDR's buffering hypothesis within school contexts.

Similarly, probing the *job resources * student demands* interaction shows no significant slope for high job resources (β = -0.03, p = 0.41) but does show significant slopes for principals at the mean of job resources and for jobs at one standard deviation below job resources. This effect is graphed in Model 7, with the green, dashed and dotted line showing high job resources (β = -0.03, p = 0.41), the red dashed line showing average job resources (β = -0.09, $p < 0.00$) and the solid black line showing low job resources (β = -0.16, $p < 0.00$). The region of significance for this interaction is above a low mean of job resources -22.8 and below a mean job resources of 0.87 (*inside* the region). Job resources buffers the relationship between school demands and job satisfaction for principals who report below mean job resources of 0.87 and the effect becomes stronger for principals who report lower job resources.

Theory would suggest that we would see a magnitude difference—a shallower (that is, buffered) slope for high school climate schools over low resourced schools. We would expect the same relationship for the slope of high job resource principals over low job resource principals. This was the case for both when inputted into Preacher input calculator for simple intercepts, simple slopes, and regions of significance in HLM 2-way interactions (Preacher et al., 2006). The moderator was significant at the low and average values of climate or job resources. I did

find evidence for the hypothesis for Research Question 4. As I will discuss in Chapter 6, these results are novel and important since they suggest that an increase in school and job resources does moderate the effect of demands on job satisfaction for some schools. I returned to examining individual level predictors of job satisfaction that began in models 1-4. I attempted to account for country-level differences by adding country-level variables.

Model 7.
*Job Resources * Student Demands Interaction*



Notes. Alpha = 0.5. Top green dashed and dotted line showing high job resources (β =- 0.03, p < 0.41). Middle red dashed line showing average job resources (β = -0.09, p < 0.00). Bottom solid black line showing low job resources (β = -0.16, p < 0.00).

Chapter 5: Contextual and Country-Level Effects

Besides examining associations between job satisfaction and demands and resources at the principal level (Research Questions 1-4 in Chapter 4), this dissertation also explores whether these relationships are different when considering principals in their country contexts. In this chapter, I account for cluster or country level 2 covariates using two modeling strategies.

My fifth research question asked to what extent the relationship between demands and resources on job satisfaction varies within-country and between countries. The differences between principal- and country-level relationships, known as contextual effects, are revealed by simultaneously modeling within and between-country associations (Raudenbush & Bryk, 2002). This chapter reports results of multilevel contextual effects modeling that incorporated both principal- and country-level demands and resources variables into statistical models. This allowed for estimating both the effects of country-level perceptions after controlling for individual principals' perceptions, and the effects of individual perceptions after controlling for country-level perceptions. I hypothesized that I would detect contextual effects.

My sixth and final research question asked whether country-level investments in education change the relationship among the dependent variable, job satisfaction, and the demands and resources independent variables. I hypothesized that larger educational investments would be positively associated with job satisfaction, would strengthen the positive relationship between job satisfaction and resources, and would weaken the negative relationship between job satisfaction and demands. During this stage I also compared how my subsample of OECD countries and how the U.S. subsample differed from my analytical sample. After reporting results in this chapter, I delve into the implications of those results in Chapter 6.

Contextual Effects

I identified a wide variation across the 48 countries in my sample in country-level means of job satisfaction as well as in demands and resources. As reported previously, average principal job satisfaction ranges from 8.10 in Japan to 10.86 in Columbia, with all country results reproduced in Table 11. Furthermore, wide variation exists for most of my independent variables of interest. For instance, on average, Bulgarian principals report devoting 2.8% of their time devoted to administrative work, while Austrian principals report devoting 18.2% of their time to this work. Japanese principals report an average of 19% year-over-year average turnover, while Chilean principals report an average of 3% turnover. Italian principals report low average levels of accountability (1.38) while Singaporean principals report high accountability (3.83). I report the ICC for each of the independent variables of interest in Table 14. These ICCs ranged from 0.01, suggesting little country level variation to 0.45, suggesting high levels of between-country variation. The presence of significant between-country variation in the majority of my independent variables of interest (ICC > 0.05) necessitated accounting for contextual effects.

I created three models to examine contextual effects. As detailed in Chapter 3, this method can partial out country and principal level effects. Given the complexity of the model, I reproduce just the contextual effects equations:

Level 1: $Y_{ij} = \beta_{0j} + \beta_{1j}(X_{ij} - \overline{X_{.j}}) + r_{ij}$ $\quad r_{ij} \sim N(0, \sigma^2)$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}(\overline{X_{.j}} - \overline{X_{..}}) + u_{0j}$ $\quad u_{0j} \sim N(0, \tau_{00})$

$\beta_{1j} = \gamma_{10}$

Combined: $Y_{ij} = \gamma_{00} + \gamma_{10}\left(X - \overline{X_{.j}}\right) + \gamma_{01}\left(X_{.j} - \overline{X_{..}}\right) + u_{0j} + r_{ij}$

In the contextual equations above, *i* denotes individual principals and *j* denotes countries. Y_{ij} is the dependent variable value, job satisfaction, and X_{ij} is one of the demands or resources

variables observed for principal *i* in country *j*. $\overline{X_{.J}}$ denotes the average of the X_{ij} values for country *j*, while $\bar{X}_{..}$ refers to the grand mean. Note that I model both within and between country associations within the same equation. Both level-1 and level-2 error terms are assumed to be independent and identically distributed following a normal distribution with mean 0 and variance σ^2 at level 1 and τ_{00} at level 2. This contextual effects modeling allowed me to simultaneously estimate the so-called 'true' relationship between the dependent variables and the independent variables of interest at level 1 and level 2 variables separately (Kreft et al., 1995). This strategy allowed me to disentangle the within-group and the between-group components from the total variation to examine whether and how country contexts are associated with principal job satisfaction outcomes. I began by modeling the job resources contextual variables (Model 8 in Table 18), building up from the first series of models (Models 1-4, Table 12). I then modeled job demands contextual variables (Model 9 in Table 18), again building up from the first series of models (Models 1.1-4.1, Table 13). Lastly, I combined the resources and demands models (Model 10, Table 18). We would observe a contextual effect if the relationship is stronger at the country level than at the individual level. Note, using CWC changed the intercepts to the unadjusted group-means on job satisfaction.

Model 8 added back centering around the grand mean (CGM) at level-2 to examine the compositional effect—the difference in job satisfaction we would expect between two principals with the same individual school resources variables who lead in countries differing by one unit in that school resources variable. I produced a country grand mean (CGM) for each variable and tested the added explanatory power of adding each individual variable. Adding random slopes did not improve these models. Within the resources model, only mean salary was statistically significant and improved model fit. For instance, for principal satisfaction with salary, γ_{16},

$Salary_{cwc}$, was 0.07 while γ_{01}, Mean Salary, was 0.66. Both effects were significantly different from zero ($p < 0.001$). γ_{01} was the expected change (0.66) between the means of two countries for every one-unit difference in mean salary. γ_{10} was the expected change (0.07) in job satisfaction between two principals in the same country who differ by one unit on job satisfaction. These results suggested a contextual effect; the country-average satisfaction with salary was a stronger predictor of job satisfaction than individual principal satisfaction with salary. This model accounted for an additional 14% of the variance at the country level against the previous resource model which did not include this contextual variance but did not explain any additional variance at the principal level, as expected.

The opposite relationship was seen with accountability and shortage of teachers in the demands Model 9. In Model 9, γ_{10}, $Accountability_{cwc}$, was 0.04 while γ_{01}, Mean Accountability, was -0.22. Both effects were significantly different from zero ($p < 0.001$). γ_{01} was the expected change (-0.22) between the means of two countries for every one-unit difference in accountability. γ_{10} was the expected change (0.04) in job satisfaction between two principals in the same country who differ by one unit on accountability. Again, these results suggested a contextual effect; the country-average accountability in schools was a stronger predictor of job satisfaction than individual principal perceived danger. This finding helps account for a counterintuitive finding in the previous models. Model 3.1 found that accountability was positively associated with job satisfaction, a finding counter to the literature. However, the country-level effect of school accountability on job satisfaction, controlling for other individual level school variables (holding the individual school accountability measure constant), shows the expected negative relationship. For every one-unit difference in mean country accountability, we

expect a -0.22 change in individual job satisfaction. As accountability within a country increases, average individual job satisfaction decreases.

Interestingly, the opposite relationship was found in shortages of teachers. After holding individual school shortages of teachers constant, as mean shortages in a country increased, job satisfaction increased. This relationship might be illustrating a relative effect between school climate and job satisfaction. A principals' satisfaction may be related to how they perceive or compare their school to others in their country. If schools in a specific country are perceived to have wide shortages of teachers relative to an individuals' school, principals may feel higher satisfaction (that is, lower levels of dissatisfaction). This model explained an additional 9% of the variance at the country level but did not explain any additional variance at the principal level, again as expected. Adding random slopes did not improve these models.

Model 10 added resources and demands into a singular model. All resources were found to be significant ($p < 0.01$). All demands, except for individual level shortages of teachers and individual level accountability were significant ($p < 0.05$). Age was no longer significant in the model. Adding random slopes did not improve these models. This model helped explain an additional 16% of the country level variance against Model 8 and an additional 27% of the country level variance against model 9. Adding resources to the demands model explained 29% of the variance at the principal level. The contextual relationships identified in models 8 and 9 were significant in this model. The contextual effect of salary increased after accounting for school demands. This suggests that, even after accounting for the difficulties of the position, the country-average satisfaction with salary was a stronger predictor of job satisfaction than individual satisfaction with principal salary. The effect was similarly strong for accountability and shortage of teachers. For both, individual-level effects became insignificant after accounting

for school resources, but country-level effects became more significant. These results confirm the hypothesis for Research Question 5: contextual effects were detectable. These results suggest further exploration of country level indicators is warranted.

Country-Level Indicators

After modeling individual principal and school-level associations with principal job satisfaction, I next looked at country-level investments in education. I added six country-level variables to my next series of models (Resources Models 12-15, Demands Models 12.1-15.1). These variables were collected by the OECD in their Indicators of Educational Systems (INES) 2018 survey and included in my models based on my review of the literature, as noted in Chapter 2. Adding these country-level variables also supports the comparative research framework suggested by Adler (1983) by modeling country-level differences in resources by using equivalent purchasing power parities, relative income, and spending on educational institutions. Similarly, I added a level-2 variable of how much the general society in the country values education to capture variations in societal norms and appreciation for educators.

Only 28 countries reported complete INES level-2 data. Furthermore, this subsample containing level-2 data differs from the subsample missing level-2 data. These differences are reported in Table 19. There are statistically significant differences between these samples in job demands, with the INES sample reporting higher job satisfaction ($p < 0.00$), more administrator time ($p < 0.00$), less accountability ($p < 0.00$), more reported barriers to PD ($p < 0.00$) and higher proportion of teacher turnover ($p < 0.00$). The INES sample also reported lower levels of resources, with trust, innovation, collaboration, and satisfaction with the profession all lower than those from subsamples missing level-2 data ($p < 0.00$). The INES sample is made up of, on average, a smaller proportion of female principals, slightly older, more experienced principals (p

< 0.00). On average across the sample, the INES sample includes a larger proportion of suburban schools ($p < 0.00$).

To examine how country-level differences are associated with job satisfaction I first analyzed a new unconditional model without any predictor variables. Since I used a different sample compared to the first series of models, I needed to determine the proportion of variance between job satisfaction at level 1 and 2 in this subsample. Seven percent of the variance in job satisfaction in the TALIS 2018 sample is attributable to countries in this subsample. The ICC was significant ($p < 0.001$), providing a rationale for the use of hierarchical linear modeling to investigate additional models. Again, because I used a subset of the TALIS data from the previous models, I used the sample build-up procedure. In keeping with my theoretical framework, I added resources and demands variables individually and tested fixed and random slopes. Adding random slopes to both the resources and demands variables again did not improve the model. School resources and demand variables that did not contribute to the model and were removed at this stage. Results of this model-building process mirrored the previous resources Models 1-4 and demands Models1.1-4.1. The same variables that did not contribute to Models 1-4 and 1.1-4.1 similarly did not contribute to resources Models 11-15 nor demands Models 11.1-15.1. I discuss these findings in Chapter 6.

I then tested the six country-level educational variables individually using AIC, BIC, and LR testing, as discussed in Chapter 3. These results are reported in Table 20 and Table 21. Results using all 28 countries in the subsample suggested that none of the country-level inputs improved the model fit. None of the values were statistically or substantively significant, even at a higher threshold for significance ($p < 0.05$). This, too, was a surprising finding, given that previous work on TALIS data (Bellibas & Liu, 2017; Duyar et al., 2013; Gumus & Bellibas,

2016), internal OECD research (OECD, 2018), and my own conference presentations (Brown, 2019) suggested that country-level inputs would be significant. These results do not support my hypotheses for RQ 6 that the six country level variables would be significantly positively associated with job satisfaction, holding all else constant.

While the preceding HLM analyses illuminated whether relationships between principal level variables change as a function of higher-order country variables, testing interactive terms at this stage presents a number of methodological issues. Kerr (1998) warned against "Hypothesizing After Results are Known" or HARKing. HARKing, in this case, would be testing all combinations of interaction terms to find those that are significant (so-called *p*-hacking) and then incorporating the findings into my research narrative. I did not specify my interaction hypotheses during the proposal or preregistration stage. Despite having enough power to detect cross-level interactions above the convention 0.80 power level given the principal and country level sample size (using Optimal Design Software (Raudenbush et al., 2011)), I did not include interactive terms in analyses at this stage.

In keeping with my research plan, I next tested whether alternative country-level groupings would reduce variation in the model and support better model fit for country-level data. Of the 28 countries with level-2 data, 18 were located in Europe (Austria, Belgium, Czech Republic, Denmark, England–United Kingdom, Spain, Finland, France, Hungary, Italy, Lithuania, Latvia, Netherlands, Portugal, Slovak Republic, Slovenia, Sweden). Two were located in South America (Chile, Columbia). Three were located in North America (USA, Mexico, Canada), while five countries were located across Asia and Austral-Asia (Turkey, Israel, Japan, Australia, New Zealand). Given the wide variation in educational, political, and economic contexts between the American, Asian, and Austral-Asian countries, I decided to just conduct my

next analysis on European Union countries (plus Great Britain, as it was a member of the EU at the time of survey).

Limiting my analysis to these countries is supported in both educational policy research generally and within the TALIS-OECD framework in particular (Leiden & Buiskool, 2005; Scheerens, 2011; TALIS-OECD, 2018). In 2000, all of the above countries signed the EU's Lisbon goals (Scheerens, 2011). These goals laid out a cohesive strategy for shared participation and objectives in education. Indeed, the EU created the TALIS survey in 2007 to gather common data on student achievement as well as principal and teacher development (TALIS-OECD, 2013). By sharing data across countries within the EU, the TALIS commission hoped to drive evidence-based policymaking and peer-reviewed exchange of research findings. Furthermore, in 2010 the Education Council of the EU adopted three shared benchmarks related to primary and secondary education, one of which focused on supporting teacher and leadership (Scheerens, 2011). Given these common education goals and partnership, as well as membership in the EU, limiting my lens to include only these countries is justified.

I ran the same model building process on EU countries. Six percent of the variance in job satisfaction in the EU subsample was attributable to countries in this subsample. Again, despite having enough power to detect cross-level interactions above the convention 0.80 power level given the principal and EU country level sample size (using Optimal Design Software (Raudenbush et al., 2011)), none of the level-2 variables contributed to the model or were statistically significant. Since the EU results did not differ in any statistically substantive way from the overall TALIS results, I do not report them in the Appendix.

For the final stage of my data analysis, I examined just the U.S. results, as discussed in Chapter 3. This would allow me to compare my U.S. results to the bulk of the research literature

relating to principal job satisfaction, as most of the research was conducted in the U.S. As I report in Table 19, the U.S. subsample differed significantly from 28-country INES subsample. On average, the 164 principals in the U.S. sample reported higher mean job satisfaction (10.15), ($p < 0.00$), less administrative time ($p < 0.00$), fewer instances of teacher shortages or teacher turnover ($p < 0.00$), more opportunities for PD ($p < 0.00$) and higher trust in teachers ($p < 0.00$) compared to the INES sample. At the same time, on average, they report higher student violence and safety issues ($p < 0.00$). Compared to the 28-country INES sample, the average U.S. principal tended to be male and reported fewer years as both a teacher and as a principal.

I examined just the variables that I used in previous Resource Models 12-15 and Demands Models 12.1-15.1. This was to preserve continuity between the models and to compare results between the entire TALIS analytical sample results and the U.S. sample results. Results of this ordinary least squares (OLS) analysis are reported in Table 22. To prevent overfitting given the limited size of the U.S. sample, I dropped variables in the model building process that were not significant as measured by an *F*-test, an LR test and by comparing the root mean squared error (Allison, 1998). I ran only robust standard errors for the final models. During the model building process, I dropped administrative time, barriers to PD, PD, stress, turnover, and gender. These were not significant and did not add to the models. While violence was not statistically significant in the Model 16, I kept it in because I wanted to examine whether controlling for school resources would strengthen its association with job satisfaction in Model 18 (as it has in previous models). Model 18 suggests that, all else equal, job benefits (but not salary) and satisfaction with the profession are strong predictors of job satisfaction with U.S. principals. School innovation and distributed leadership are also important predictors of job satisfaction. I explicate the results of Model 18 in the discussion section that follows.

Chapter 6: Discussion

The objective of this dissertation was to use a large, representative database to understand how school and country-level variables influence principal workplace satisfaction, as measured by the four question TALIS scale. Results of my statistical models show that several principal, school, and country characteristics had a statistically significant relationship with job satisfaction across the countries in the TALIS International Database. This chapter first examines more granular findings within my models as driven by my hypotheses. Next, this chapter provides a summary of five broader findings from my statistical models. I then suggest important limitations to these findings. After discussing my models and their limits, I shift towards a more abstract discussion of principal job satisfaction within the context of the school reform movement and other changes to the principalship. Lastly, I outline policy implications and areas for future research.

Although most of the associations in this analysis account for a small level of the percent of variance explained at both the school and country-level, these findings suggest that working conditions are associated with relatively higher or lower levels of principal satisfaction on the TALIS scale after other factors are taken into account. In Chapter 2, I noted that scholars have studied the relationship between satisfaction and relationships with others (e.g., teachers, parents, students, central office staff), level of accountability and scope of responsibilities, and school characteristics (e.g., urbanicity, grade span, size, student composition). While I found evidence to corroborate many of the findings in the literature originating from smaller-scale studies, my statistical models found several findings counter to the prevailing theory. Results of my dataset help clarify the direction and strength of these associations. These findings are derived from the

international dataset. Findings that are also supported by evidence from the more limited U.S. subsample are noted.

Social Relationships, Accountability, and Autonomy

Existing research points to positive social relationships among the top reasons for administrators' continued satisfaction with schools (Friesen, Holdaway, & Rice, 1983; Johnson & Holdaway, 1994; White, Brown, Hunt, & Klostermann, 2011). These include relationships with students (Darmody & Smyth, 2011; Gunn & Holdaway, 1986; Hill, 1994), teachers, (Conley et al., 2007; Liu & Bellibas, 2018; White et al., 2011), and parents (Fraser & Brock, 2006; Friesen et al., 1983). My findings (especially from Model 10, Table 18) support this notion. The school violence measure in these models, with its strong negative relationship with job satisfaction, suggests this to be a key factor in shaping job satisfaction. The TALIS trust and collaboration measures, with their strong positive relationship with job satisfaction, also suggests these to be central factors. Teacher turnover was also related to job satisfaction. This suggests that widespread turnover among teachers can compromise a leader's sense of happiness and professional fulfillment at that principal's current school. Given the cross-sectional nature of the data, this might also indicate that the direction is reversed or that both are variables are influenced by another variable. This finding supports the existing literature, (Brogan et al., 2005; Darmody & Smyth, 2011; DiPaola & Tschannen-Moran, 2003; Liu & Bellibas, 2018) but also suggests that turnover may be a strong and easily quantifiable early warning indicator for low principal job satisfaction and, distally, for principal turnover. Taken together, factors suggest that the quality of the school climate is of critical importance in shaping perceptions of the workplace.

Previous literature has linked high satisfaction with greater levels of decision-making autonomy from central office staff (Chaplain, 2001; Iannone, 1973; White et al., 2011). Results from my OECD subsample in Model 15 (Table 20) suggest that country-level autonomy policies—as measured by the percent made by the principal as opposed to district, state, or country stakeholders—do not show any relationship with job satisfaction, all else equal. This finding may suggest that country-wide policies around school autonomy fail to shape the individualized perceptions around principal work and that this work is highly individualized within specific communal contexts. These findings, however, must be tempered with the limitations around this level-2 variable. These include issues with construct validity of the "autonomy" construct across all countries (INES does not discuss how they insured construct validity across all countries in the OECD database) and statistical power to detect effects in more level 2 ($j = 28$), in addition to limitations that will be mentioned later in this chapter.

These limitations likewise apply to this dissertation's findings regarding accountability. Model 3.1 (Table 13) found that accountability— the number of times per year an outsider visits the school for supervisory purposes—was positively associated with job satisfaction, a finding counter to the literature. This suggests that, on an individual level, principals report this supervision to be supportive in some way. However, the country-level effect of school accountability on job satisfaction from Model 10 (Table 18), controlling for other individual-level school variables (holding the individual school accountability measure constant), shows the expected negative relationship. For every one-unit difference in mean country accountability, we expect a significant and negative change in individual job satisfaction. As average accountability within a country increases, average individual job satisfaction decreases. This finding may

suggest that when accountability visits to schools are widespread and frequent across a country, they no longer serve as a support for principal workplace wellbeing.

However, this proxy measure for accountability requires scrutiny. First, the TALIS 2018 did not capture information on the more traditional forms of school accountability, which is most often associated with test scores or other educational reform assessments (Sahlberg, 2016), especially in the United States (Mehta, 2015). Future rounds of TALIS surveys should collect more detailed data on these more traditional forms of accountability. Despite this limitation, this finding dovetails with the previous finding regarding autonomy. Principal practices are personal. Country-wide policies may not be seen as supportive to the individualized needs of principals. These findings support the work of Chaplain (2001), who noted that mandated accountability policy changes from federal governments multiplied principals' stress. He found that school leaders had to understand the legal implications of these rules and then assimilate them into their individualized and sometimes incompatible contexts.

This phenomenon also helps make sense of the aforementioned finding regarding shortages of teachers. After holding individual school shortages of teachers constant, as mean shortages in a country increased, job satisfaction increased. This relationship might be illustrating a relative effect between school climate and job satisfaction. Principals' satisfaction may be related to how they perceive or compare their schools to other schools in the country. If other schools in a specific country are perceived externally to have wide shortages of teachers relative to an individual's school, principals may feel higher satisfaction, that is, less dissatisfaction when they compare their situation to those of leaders in other schools.

Individualized Support

The previous section tracked how school contexts and country-wide contexts shape (or fail to shape) perceptions of principal leadership. My results also show that the availability of resources within school contexts shapes how principals view their jobs. Model 10 (Table 18) found that, all else equal, access to multiple modalities of professional development opportunities throughout the year was a significant positive predictor of job satisfaction. Barriers to professional growth opportunities—a lack of employer support, work conflicts, financial resources, time, and incentives—contributed to lower job satisfaction (the PD and barrier variables were weakly negatively correlated). This is an important finding, as little is known about how professional development relates to job satisfaction after controlling for other principal and school factors (Snodgrass Rangel, 2018).

Financial compensation is an important form of principal support (Snodgrass Rangel, 2018). Results from Model 15 (Table 20) show neither a a relationship between country-level average salary (that is, buying power) and satisfaction, nor a relationship between country-level relative earnings (compared to similarly educated workers) and satisfaction. Nevertheless, results in Model 10 (Table 18) indicated very strong evidence for a relationship between principal perceived satisfaction with pay and workplace satisfaction, even after controlling for principal and school factors. Results from the U.S. subsample in Model 18 (Table 22) support this relationship. There is a contextual effect in Model 10; the country-average satisfaction with salary was a stronger predictor of job satisfaction than individual principal satisfaction with salary.

This contextual finding is counterintuitive. Results from Model 10 suggest that country-wide policies did have an observed relationship with job satisfaction. This finding suggests that

country-wide remuneration policies are a more powerful predictor of satisfaction. It is possible that countries with higher than average satisfaction with pay are countries in which the value of educational careers are held in higher esteem. However, Model 15 (Table 20) did not find a relationship between the country-wide perceived value of the profession and job satisfaction. It is also possible that this finding reflects what scholars note is the importance of non-pecuniary aspects of the principal labor market (Branch et al., 2009; Snodgrass Rangel, 2018; Sun & Ni, 2016). Indeed, all else equal, principal satisfaction with benefits and satisfaction with the profession was strongly positively related to job satisfaction in Model 10 and Model 15, and both were far more significant than satisfaction with salary (same scale). Finally, this counterintuitive finding may also reflect some aspect of the non-traditional labor market for school principals. Scholars note the unique job stressors principals must contend with compared to similarly educated and compensated administrators in non-educational fields: overlapping and often conflicting stakeholders, few areas of career advancement, and often few resources from supervisors (Cullen & Mazzeo, 2008; Pijanowski & Brady, 2009; Tran, 2017). Tenure and pension structures, which might motivate principals to remain in specific schools or districts (DeAngelis & White, 2011), are additional factors indicating that the principal job market is unlikely to fit assumptions motivating standard predictions of economic efficiency in competitive markets. Given their relatively fixed salary growth, principals may look towards other factors that signal their value. While the mechanisms through which these perceptions of salary have their impact are speculative, this is an area worthy of future study, especially since findings in the literature around the effect of pay on satisfaction are inconsistent (Bacharach & Mitchell, 1983; Cullen & Mazzeo, 2008; Pijanowski & Brady, 2009; Tran, 2017).

School Demographics

International school leadership literature has long suggested a link between a school's environment—its location, type, size, and student population—and the general behaviors and mindset of its leader (Day & Leithwood, 2007; Goldring & Huff, 2008; Hallinger, 2018; Hallinger & Heck, 1996). This study using international data, while controlling for multiple other factors simultaneously, found that many of these demographic factors do not, however, relate meaningfully to principal job satisfaction in particular.

Initial models in this dissertation identified no differences between urban and suburban principals on job satisfaction. Rural principals report greater job dissatisfaction. This suburban-rural divide, however, was not significant in my contextual and country-level models. It was also not significant in the U.S. subsample. This finding is supported by the literature, with Chang et al. (2015) and Friedman, Friedman, and Markow (2008) also finding no relationship after controlling for a range of other factors. Chang et al. (2015) also found that differences between urban and suburban principals were no longer significant after perceived autonomy and support were added into the models. These results suggest that several models within the literature are underspecified, too often using urbanicity as a proxy for a range of factors, such as average student SES, the proportion of immigrant or special needs students, or access to resources. This underspecificity yields biased regression coefficients and, subsequently, inaccurate policy recommendations.

This pattern of underspecification exists across other studies of principal demographics. Cooper and Kelly (1993) speculated about why they found primary school principals report higher levels of dissatisfaction. They suggested lower levels of administrative support staff, autonomy, resources, and status as key drivers of this differentiation. After controlling for these

factors within my models, it appears that school type was not significant early in the model building process, even after testing multiple iterations of school type. These findings are supported by more recent work by Wang, Pollack, and Hauseman (2018) who likewise suggest that, rather than student composition or funding source (public vs. private), it is the *type* of work that principals are engaged in that predicts job satisfaction. Finally, Sparkes and McIntire (2012) found that principals in small schools reported lower levels of job satisfaction. They, too, speculate that this is because these principals lack professional development and other educational resources. Again, these models were able to control for these very factors. School size was not a significant predictor, supporting the work of Vang (2015).

Principal Demographics

Previous smaller-scale studies identified non-linear relationships between satisfaction and age (Borg & Riding, 1993; Darmody & Smyth, 2011; Eckman, 2004), suggesting that early and late career principals report higher levels of satisfaction than those mid-career. I tested this relationship in the TALIS database but only yielded evidence for a linear relationship that attenuated from slightly positively significant to not significant once other school, principal, and control variables were added to the model. This suggests that factors beyond age contribute to job satisfaction. This finding might also reflect data and power loss (added degrees of freedom) from the fact that TALIS 2018 reported categorical age groupings, rather than age as a more conventional continuous variable (TALIS-OECD, 2018).

These results suggest that each additional year of experience within the school results in a slight but statistically significant increase in job satisfaction, all else equal. This supports evidence from smaller-scale studies regarding experience (Chang et al., 2015; Darmody & Smyth, 2011). This also supports Lortie's (1975) foundational role constraints hypothesis

suggesting that principals tend to socialize into the constraints of bureaucratized school systems with more experience in specific schools.

Little is known about the relationship between principal education and job satisfaction. Brogan et al. (2005) found no effect of more advanced education, such as a doctorate or other professional degree, on satisfaction. Evidence from principal turnover studies shows conflicting results, with most showing no or negative relationship between education and turnover (Baker et al., 2010; Gates et al., 2006; Ni et al., 2015; Tekleselassie & Villarreal, 2011). This study found no evidence of a relationship after controlling for school, principal, and control variables. Indeed, I removed principal education early in the model building process as it did not contribute to international or U.S. models. This study further supports the findings of Brogan et al. (2005) regarding advanced education. These findings are particularly noteworthy because advanced education and training requirements are gatekeeping policy tools that educational authorities use to promote the professionalization of the profession (Grissom & Harrington, 2010; Gumus & Bellibas, 2016). This dissertation's findings suggest that professional development, a more cost effective and personalized *in situ* form of professionalization, has a stronger relationship with job satisfaction than formal tertiary education (because the latter was no significant in the models).

In the international sample, I found that female principals were more satisfied with their jobs, even after controlling for school, principal, control, and country-level factors. This was the strongest factor among principal demographic variables in predicting job satisfaction. This finding adds weight to quantitative studies that find gender differences between school leaders, with female principals reporting higher satisfaction (Boyce & Bowers, 2016a; Brogan et al., 2005; Cooper & Kelly, 1993). Yet my subsequent U.S. model did not detect gender differences. These findings must also be weighed against studies suggesting no gender differences (Darmody

& Smyth, 2011; Eckman, 2004; Wang et al., 2018) and other smaller-scale studies finding male principals to report lower satisfaction (Fansher & Buxton, 1984; Hill, 1994; Trusty & Sergiovanni, 1966). The underlying mechanism why females report higher job satisfaction is a major topic of industrial psychology, with the literature consistently finding females to report higher levels of job satisfaction across most occupations (Clark, 1997; Sousa Poza, 2000; Zou, 2015).

The literature suggests several reasons for these gender differences (though many appear dated in their discussion of gender norms) that may apply to school leadership. One possible reason for this difference in satisfaction may be rooted in a difference in work orientations, with males more likely to value extrinsic and intrinsic job rewards while females more likely to emphasize social relations and flexible work arrangements (Zou, 2015). Clark (1997) argues that females' differentiated expectations of work may give rise to these consistently observed gender differences within the same jobs. Females report lower expectations for what they expect to receive in reward from their workplace and therefore report having their needs met more often. Males, on the other hand, report higher intrinsic and extrinsic needs, such as salary or promotion, that more often go unmet. Finally, Sousa Poza (2000) argues that this differentiation may be rooted in a sampling problem: women who are dissatisfied in their jobs are more likely to leave the labor market since females are still primarily responsible for domestic life and childcare, and males responsible for finances. Females more often shift out of the workforce, and those who stay, Sousa Poza (2000) suggests, may be doing so because of a higher affinity towards their workplace. All of these suggestions may be at play in making sense of this gender differentiation among principals, since a body of work has already found important differences in their orientation towards their leadership roles (Duncan, 2013; Hardman et al., 1996; Shaked et al.,

2018). Qualitative studies of female principals have already illuminated how gender colors the experiences of school leadership and future small-scale studies that add job satisfaction into the research questions can suggest reasons for this gender difference.

This section summarized key individual findings related to principal and school demographics, principal support, social relationships, accountability, and autonomy. Before moving from my analysis of individual findings to policy development, I highlight five findings from this study a contribution to the field. These larger findings add insight to the study of school leadership, clarify and corroborate the findings within the limited literature on job satisfaction, and complicate the job-demands-resources framework.

Key Findings

A number of my findings cut against the grain of the prevailing notions of principal work. The first important finding relates to the relationship between high-needs schools and job satisfaction. There is a notion within both the qualitative and practitioner literature that principals in schools with predominantly low-income and other high needs students will suffer from low job satisfaction (Schiess, 2018; Strauss, 2013). After controlling for various school factors, including levels of school violence, this analysis of both the international and U.S. samples did not find associations between student socioeconomic factors and job satisfaction.

This dissertation's second key finding also diverges from conventional literature. While many smaller-scale studies of principal satisfaction cite administrative workload (as defined by administrative time) as negatively related to principal job satisfaction (Cooper & Kelly, 1993; Wang et al., 2018; White et al., 2011; Wong et al., 2000), the results from both the international and U.S. samples suggest that after controlling for principal and school variables, administrator time in proportion to other time was not a meaningfully significant negative predictor of job

satisfaction. I found that teacher turnover and an inability to find strong replacements (shortages of teachers), was strongly related to job satisfaction. This finding supports evidence from previous findings that suggest staffing to be among the highest administrative stressors for school principals (Darmody & Smyth, 2011; DiPaola & Tschannen-Moran, 2003).

This study of the TALIS 2018 data suggests a third novel finding. This hierarchical analysis using country-level data found that factors at the principal level (as opposed to the country-level) have the largest association with the job satisfaction beliefs of principals. This suggests that job satisfaction is influenced, primarily, by personal experience (including school factors). Despite often wide variation in characteristics between countries on school and principal factors, country-level context matters less than school factors, *ceteris paribus*. In addition to salary, teacher shortages, and accountability, where evidence suggests that country-level differences matter, interventions aimed at increasing job satisfaction should, therefore, be personal in nature. Sweeping district-wide changes to principal work-life (by adding additional administrators or office staff, for instance) will likely not have their intended effect on job satisfaction.

This work's fourth important finding relates to the moderator analysis of Chapter 4. My analysis of moderating effects within the international sample suggests that an increase in school resources does moderate the effect of demands on job satisfaction. Similarly, an increase in job resources moderates the effect of demands on job satisfaction. Theory would suggest that we would see a magnitude difference—a shallower, buffered slope for high resourced schools over low resourced schools and high job resources over low job resources. I detected this buffered slope for both school and job resources after probing the results of my moderator analysis. Higher levels of school resources did buffer the influence of high demands schools on job

satisfaction. Adding resources to high demands schools may raise principal job satisfaction and therefore may distally lower turnover rates. Supporting principals through higher job resources may also raise principal job satisfaction.

A fifth consequential finding questions the utility of the job-demands-resources theory in making sense of principal work. While the job-demands-resources theory (JDR) drove the conceptualization of school and principal characteristics, these findings complicate the binary nature of this theory. The Bakker and Demerouti (2007) framework, the latest and most widely-adopted model of workplace satisfaction, may not fit the complex nature of principal work. There is insufficient evidence from the international sample in the exploratory or confirmatory factor analysis to suggest that factors traditionally thought of as "resources" factor together. Indeed, the variables hypothesized to be included under "job resources" (Schaufeli & Taris, 2014) did not load unidimensionally. Similarly, the variables hypothesized to be included in "job demands" (Schaufeli & Taris, 2014) also did not load cleanly. These results may be due to a *post-hoc* attempt to fit various factors into either resources or demands (as opposed to a survey instrument created to align with the JDR framework; Guglielmi et al., 2012). These results may also suggest that factors that may be seen as demands in some workplaces (such as accountability) may be considered resources by principals. This may be due to the unique challenges of the principalship, such as the loneliness inherent in the principalship, need to manage trivial administrative tasks, a lack of district support, and ambiguous roles (Borg & Riding, 1993; Carr, 1994; Chaplain, 2001). These findings suggest that the JDR framework, while popular in management and business studies (Schaufeli & Taris, 2014), may require revision or customization to fit the roles of principals.

These five findings challenge conventional notions of job satisfaction. Collectively, they suggest that job satisfaction is deeply relational. The role of school leadership is characterized by interdependence among many stakeholders (Leithwood, 2005; Leithwood et al., 2004). It is not surprising then that the direct social context within which principals operate contributes most significantly to their job satisfaction. Trust, collaboration, and distributed leadership—all strongly positively associated with job satisfaction—are markers of the relational nature of the job. Student violence, teacher turnover, and barriers to professional development and growth—all strongly negatively associated with job satisfaction—point to how a breakdown in the social context can contribute to declining job satisfaction. Other facets, such as school size, school type, and public-school status, were not significant. These suggest that existing relationships within schools matter more than demographic factors. More interestingly, shortages of materials and the number of teacher coaches and administrators were dropped early in the model building process as these too were not significant and did not contribute to both the international and U.S. models. This finding suggests that, rather than the presence of resources or support for principals, it is the *quality* of those relationships that matters for job satisfaction. The presence of high-needs students does not decrease job satisfaction. It is rather the relational quality of those students that matters.

Limitations

Despite the contribution of the present analysis to understanding the contextual and individual influences on principal job satisfaction, the TALIS dataset has statistical and methodological limitations. Indeed, Raudenbush and Kim (2002) note that large-scale international studies require a more comprehensive discussion of limitations given their complexity. In keeping with their guidance, I will discuss five of the most critical limitations:

causality, weaknesses in self-reports, issues of survey design, omitted variable bias, and complications with large, cross-country surveys (an issue already discussed in Chapter 2 and Chapter 3).

The first limitation of this study is the cross-sectional nature of the TALIS data itself. Temporal ordering of the variables, one of the key requirements for causal interpretation, cannot be established (Raudenbush & Bryk, 2002). Since we cannot establish the direction of the variables (e.g., do lower levels of school collaboration cause lower job satisfaction or does lower job satisfaction cause lower levels of collaboration?), all reported findings are reported as correlational. As mentioned in Chapter 3, given the paucity of quantitative studies on this subject, this study serves as an initial probe of the relationships between these variables that can inform development of experimental designs in this research area. Experimental study designs can fill this gap in the field's causal understanding of job satisfaction. Yet no research to date has utilized these time and resource-intensive methods. Alternatively, single-case designs (Kratochwill et al., 2010), which will be discussed in more detail at the end of this chapter, can support limited causal conclusions.

Second, TALIS 2018 measures self-reported principal factors on job satisfaction, time use, barriers to professional development, and more. While Desimone and Le Floch (2004) note that self-report surveys can provide valid and reliable measures of educator experiences, principal responses may be affected by availability bias. Scholars have questioned the efficacy of using autobiographical questions because respondents tend to answer questions based on the most recent events and thus their judgment is unreliable (Bradburn, Rips, & Shevell, 1987). For instance, the survey response to the instruction and curriculum task allocation question asks principals to recall information across an entire year at one moment. The information solicited

from principals is likely biased by most recent events and is thus limits the reliability of the study.

Third, the survey used in these studies excludes potentially important facets of job satisfaction. The omission of important covariates can result in model misspecification and biased parameter estimates since school factors and job satisfaction may correlate with missing covariates. While this study represents an improvement compared to previous quantitative studies in the field by including a wide range of relevant covariates, Raudenbush and Kim (2002) warn that most cross-national studies will inadvertently overlook relevant covariates. For instance, the absence of data on race is a substantial limitation of the dataset. No race information was requested from principals about their race or the relative proportion of different races in the schools, despite the significance of this variable in influencing school leadership contexts (Zheng, 1996). Recent and widespread calls to examine systematic racism and structural oppression within the field of education further highlight the need to consider and interrogate the role of race in shaping outcomes (American Educational Research Association, 2020). The conspicuous absence of race information on the TALIS may obscure important variation in job satisfaction between principals of minority races, who are already underrepresented in these leadership positions (Grissom & Keiser, 2011). The omission of these and other covariates in this study may have caused an overestimation of the influence of factors related to job satisfaction.

The fourth limitation, as mentioned in Chapter 2 and Chapter 3, centers around international comparisons of key survey constructs. In sum, if cultural interpolations of TALIS questions and constructs differ across countries, these differences may be due to interpretation, rather than country-characteristics. This problem was anticipated in the survey by planning for conceptual equivalence for key variables across cultures. Furthermore, the OECD has noted that

most of the constructs within TALIS 2018 did reach metric invariance, with each item in a scale contributing to latent constructs to a similar degree across all principals in each country (TALIS-OECD, 2018). However, not all factors reached the rigorous and hard-to-obtain scalar invariance, which implies that differences in the means of observed items are the result of differences in the means of their corresponding latent factors (TALIS-OECD, 2018). TALIS suggests that without scalar invariance, direct comparisons of mean scores between countries is not advisable since these scales may have been interpreted differently in each country. To help account for this scalar issue, I incorporated centering within-clustering (CWC) and centering around grand means (CGM) as noted in Chapter 3.

The fifth limitation concerns alpha reliability in this theory-driven test of the job-demands-resources buffering hypothesis. Taber (2018) highlights the lack of consensus about whether Cronbach's alpha scores between 0.60-0.70 are acceptable or sufficient. Indeed, Cronbach's alpha scores for my three-factor resources model and one-factor demands model (α = 0.60- 0.62) suggest either low, moderate, reasonable, or sufficient acceptable levels of reliability (Taber, 2018; Trizano-Hermosilla & Alvarado, 2016). Results of the test of the buffering hypothesis should therefore reflect the less-than-ideal internal consistency with these items.

Despite these limitations, the results of this study offer preliminary support for policies that support principal job satisfaction to improve principal organizational commitment and drive, and, distally, to teacher and student performance. Given the central role that principals play within schools (Goldring et al., 2008; Leithwood & Jantzi, 2008), these findings about the relationships between demands and resources and job satisfaction are particularly valuable to education researchers, policymakers, and district practitioners. The policy implications will be interrogated following a discussion of the reform movement in shaping job satisfaction. This

discussion, which is more speculative than my findings discussed earlier in the chapter, is nevertheless informed by the results and the limitations and is, therefore, best placed after the key research findings but before any discussion of policy.

Principal Job Satisfaction and the Reform Movement

This study's results offers countervailing evidence against a notion within both the qualitative and practitioner literature of widespread leadership dissatisfaction in schools (Schiess, 2018; Strauss, 2013). While we cannot compare job satisfaction results to previous TALIS surveys (given different instrumentalization of the job satisfaction construct; TALIS-OECD, 2018), my results suggest that most principals across this representative database are satisfied with their work. Results for the U.S. sample also show that, on average, principals were even more satisfied than their peers from most other countries. In Chapter 2, I note how the reform and accountability efforts aligned with the Global Educational Reform Movement seemed to place newfound pressures on principals (Sahlberg, 2016). Why, then do we observe this general satisfaction across countries and, more specifically, within the U.S.? This phenomenon may reflect three perspectives on whether reform efforts increased the stress, pressures, and dissatisfaction within school leadership. These results may show an evolution, waning, or failure of the education reform movement in the U.S. and elsewhere as it relates to the daily work of principals.

This generally high principal satisfaction observed within the 2018 data may reflect a change in principal expectations as it relates to the Global Education Reform Movement and newfound adoption of performance-based pay, firing of poor performing staff, data-driven evaluations, evidence-based decisions, and transparency of results (Sahlberg, 2016). Those who entered the profession *before* the rise of the reform movements may have found these new

reforms unpalatable and difficult to assimilate (Payne, 2008; O'Day, 2002). This cohort of principals and their reported dissatisfaction with the profession may reflect the birth pains of education reform movements as they forced new policies and pressures on school leadership (Grissom, Loeb, & Mitani, 2015; Knapp & Feldman, 2012; Wells & Klocko, 2015). Those who entered the leadership profession *during* and *since* the rise of these reform movements may understand (and be driven by) new, higher-stakes policies. They entered the profession with knowledge of what school leadership requires and the new rigors of the job.

The aforementioned studies that sounded the alarm on low job satisfaction and high turnover tracked school leaders at critical junctures in the rise of the reform movement, starting with No Child Left Behind Act (NCLB) and advancing with Race to the Top, and the Common Core (Mehta, 2013). The Met Life study of U.S. principals in 2012, which I noted at the start of this dissertation, used data collected during heightened efforts by the federal and state governments to reform schools (Sahlberg, 2016). In contrast, this round of TALIS may reflect a cooling of pressure on principals to meet benchmarks as the policy environment has increasingly shifted away from reform efforts. As high-stakes exams and mandates are sidelined in favor of more decentralized approaches, school leaders may be signaling their approval of these new policies in their response to the TALIS 2018 survey.

A final possibility for the general satisfaction with school leadership may be rooted in the inability of the reform movement to create system-wide change. Cohen and Mehta (2017) note how difficult system-wide reform was to implement across U.S. states and the rise of what they note are "niche reforms," or subsystem smaller-scale reforms that succeed in changing only a small area of K-12 education. When examined in totality, many of the more ambitious federal system-wide reforms failed to change the working lives of teachers and principals because they

provoked hostility, failed to convince stakeholders of their value, or lacked tools, materials, or practical guidance (Cohen & Mehta, 2017). This viewpoint may explain my findings around country-level accountability practices as it relates to satisfaction. Principals operating in environments with system-wide accountability practices report lower satisfaction. Concurrently, this viewpoint may also explain the high average job satisfaction of the representative sample of U.S. and international leaders. On the whole, reform efforts failed to change the day-to-day work of principals and, therefore, their job satisfaction. Studies that seemed to suggest a marked decrease in satisfaction may have only captured changes to leadership within states or regions with niche reform efforts.

These three perspectives are not mutually exclusive. Mature reform efforts in some regions, failed reform efforts in some places, and no reform penetration in other areas reflects the panoply of education reform within the U.S. and elsewhere (Breakspear, 2012; Au, 2007; Mehta, 2013, Sahlberg, 2016). While some principals may report heightened pressures because of local reform movements, other principals may find that the tide of reform has either not reached them or has receded. Still, other principals might welcome these niche reform movements because they see them as successful and as aligning with their vision and needs (Cohen & Mehta, 2017).

These three perspectives may also clarify the relationship between other trends in school leadership and principal job satisfaction. In Chapter 1 and Chapter 2, I summarized key trends of school leaders in the 21st century. Scholars have suggested that the role of the principal has expanded in response to more diverse school populations, more complex data and technology demands, fewer funding resources, and greater demands for transparency (Hallinger, 2018; Spillane & Hunt, 2010). Given these trends, we would expect lower satisfaction than what the TALIS 2018 reported. Again, we see that these changes may be more pronounced in some

schools or regions but not others, and therefore not representative of the totality of the experience of school leaders. This also might represent how resistant schools are to these trends, with some schools not experiencing these shifts in student populations or structures. Echoing Cohen and Mehta (2017), we might also see a new generation of principals embrace these trends and more opportunities to work with higher-needs students or in higher-stakes policy environments. While the results of this study do not provide evidence of causal pathways within these larger, messier policy environments, my results nevertheless begin to point to trends, policy implications, and areas for future research in this field.

Policy Implications

School principals influence student achievement through their instructional practices, knowledge of the learning community, and relationships with teachers and stakeholders (Leithwood & Jantzi, 2008; Louis et al., 2010). This influence is built over time (Béteille et al., 2012; Miller, 2013; Weinstein et al., 2009). Principal churn stymies efforts to establish this institutional knowledge and relationships (Mascall & Leithwood, 2010). Principal attrition leads to declining school performance, increased teacher turnover, and lower graduation rates (Snodgrass Rangel, 2018). School improvement efforts, as Snodgrass-Rangel notes (2018), cannot be successful unless principals are the right fit for their schools and remain at their schools for enough time to actuate change. The findings of this dissertation point to potential policy changes to prevent these distal outcomes from materializing. By focusing on principal job satisfaction, researchers, policymakers, and practitioners can mitigate the so-called "revolving door" of principal tenure (Kachel, 2018).

Increasing principal compensation is an oft-recommended policy to increase job satisfaction and decrease attrition (Branch et al., 2009; Clotfelter et al., 2006; Tran, 2017). I

found that not only are individual salaries an important contributor to satisfaction, but the average country-wide satisfaction may be an even larger contributor to satisfaction. An increase in country-wide salaries is an indicator of the societal value of the profession and is, therefore, an obvious policy recommendation. This finding also suggests that districts can create additional signals of this value if system-wide salary or other benefits are difficult to increase. Furthermore, my results suggest that while salary is important, policymakers may also consider the larger benefits package and working context offered to school leaders. These may also include access to diverse, long-term professional development opportunities and a reduction in the logistical or financial burdens of accessing those opportunities.

A group of scholars has also suggested revising accountability practices that burden principals (Mehta, 2015; Wildy & Louden, 2000). While I discuss accountability in the form of contemporary reform movements in the previous section, my results suggest that system-wide reforms are associated with decreased satisfaction while individualized support is associated with increased satisfaction. As these systemic reforms fall out of favor (Ravitch, 2020; Mehta, 2015), districts should consider shifting resources to personalized forms of school leadership support, such as mentorship and coaching (Goff et al., 2014; Goldring et al., 2015), long-term professional learning (Browne-Ferrigno & Muth, 2004; Zepeda et al., 2015), or staffing support for clerical or financial tasks to free up time for instructional leadership (Lee & Hallinger, 2012; May et al., 2011; Supovitz et al., 2010). This dissertation's results also suggest that increasing support and professional development for distributed leadership in schools would similarly benefit school leaders in need of more personal support. This is also well-founded in school leadership literature (Camburn et al., 2003; Spillane et al., 2004).

These results suggest a strong relationship between satisfaction and turnover and given the non-causal nature of the data, this may suggest that turnover contributes to lower satisfaction or that lower leadership satisfaction contributes to greater teacher turnover. While this finding of the downstream effects of turnover is not novel (Hanselman et al., 2016; Miller, 2009; Watlington et al., 2010), this study links turnover to yet another indicator of school climate and suggest that principal satisfaction, which can be measured at multiple points in the year, can help anticipate turnover and other staffing issues that may occur at year's end.

The findings in this dissertation suggest that states and districts should measure and track principal job satisfaction as a potential early warning indicator of turnover. Short survey data can help these districts understand the individualized needs of principals while also collecting valuable information about institutional health. By collecting information about school trust, collaboration, distributed leadership, and innovation, policymakers can better pinpoint which schools might be suffering from low morale and poor interpersonal relationships. These results also suggest that existing district data can also be leveraged to anticipate low principal job satisfaction. Levels of school violence (as measured by suspension rates or discipline referrals) and year-over-year teacher turnover, which are available to districts and—in a growing number of countries—the general public, are two strong early warning indicators of possible low job satisfaction.

Areas of Future Research

The accumulated research on principal satisfaction has been valuable in drawing attention to variables that might predict turnover and in generating basic questions about future research. This dissertation provides initial evidence that job satisfaction is significantly related to principal demographic and school environmental factors. More work is needed to shed light on the link

between school and principal factors and job satisfaction, especially as reform efforts wax and wane in different policy environments. This section begins with suggested areas for future qualitative work, then discusses the limitations of experimental research in the field, and finally, proposes a more ambitious and more practical addition to the research tools available to future scholars.

Qualitative data can help make sense of the so-called "black box" of why treatments work or the possible pathways through which the treatment affects the outcome (Leviton & Lipsey, 2007). Qualitative research, already popular in the field of educational leadership studies (Camburn et al., 2016), can illuminate many of the key findings and remaining questions in this dissertation and, indeed, in the field more broadly. For instance, qualitative, case-study data can help researchers and practitioners understand why female principals, holding all else constant, are more likely to report higher job satisfaction, why school resources fail to moderate the relationship between job demands and job satisfaction, or why teacher turnover leads to lower satisfaction, or, perhaps, whether this relationship is flipped? Given the complexity of the principalship, qualitative data can help policymakers craft appropriate interventions.

To test principal job satisfaction interventions, future research in this area may also embrace experimental designs. Since causality is an important limitation in this study and indeed all studies in this area of research, causal research designs can provide evidence that a change to policy, a change in compensation, or a shift in leadership responsibility directly results in increased job satisfaction. Despite the ability of experimental and quasi-experimental designs to provide these causal inferences of the effectiveness of interventions (Shadish et al., 2002), educational leadership researchers have yet to embrace these methods. Researchers have only conducted four experimental designs within the large field of educational leadership (Camburn et

al., 2016). While experimental designs testing the aforementioned policy recommendations would lead to unbiased estimates of the treatment effect, such a study of principal job satisfaction is unlikely. The cost, availability of data, and logistical complexity of these designs have pushed educational leadership researchers to rely heavily on qualitative and cross-sectional observational designs (Camburn et al., 2016).

Single-case designs (SCs) can provide a viable and rigorous alternative to large (and impractical) experimental designs and qualitative case-study designs to study principal job satisfaction. While most often used in psychology, rare medical cases, or special education (Kratochwill et al., 2010), SC designs have particular relevance for school principals given their individual needs, contexts, and characteristics. In single case studies, researchers repeatedly record measurements of outcome variables for individual participants across time and varying levels of the intervention (Kratochwill et al., 2010). SCs are not the same as case studies. Following in the ethnographic tradition of *The Man in the Principal's Office* (Wolcott, 1973) and many other qualitative case studies since (Leithwood, 2005), case study designs center around observation and triangulation rather than manipulation (Merriam & Tisdell, 2015). In SCs, fluctuating the level of intervention—a mentorship program or a salary bonus—is referred to as a phase. Researchers record a baseline phase of job satisfaction with no intervention so that each participant serves as their own control and then record measures throughout each phase. Since each participant serves as their own control, the design controls for gender, age, leadership experience, school environments, and any other confounding variables. Systematic manipulation of the independent variables of interest allows for temporal testing of whether job satisfaction covaries with the level of treatment. Done correctly, SCs can satisfy the conditions for making causal inferences (Murnane & Willett, 2010). While SC study design obviously cannot

manipulate demographic variables, other variables highlighted in this study can be manipulated, such as benefits, school resources, PD opportunities—even autonomy and accountability practices.

Importantly, SCs require far fewer resources than experimental study designs. They can work in a variety of settings and answer a variety of research questions related to job satisfaction. SCs can, therefore, provide a methodologically rigorous alternative to experimental study designs for quantifying the effects of leadership interventions experimentally. Additionally, experimental study designs are probabilistic, showing the average treatment effect but not the individual treatment effect for principals for a particular situation. SCs can indicate whether a treatment may work for a specific situation. When SCs are paired with qualitative case study designs, already widely used in leadership studies, SCs can also illuminate why and how leadership interventions influence principal job satisfaction.

Single-case designs are not without limitations. Issues of maturation, regression, autocorrelation, and selection bias in SCs involving two or more between-case interventions can threaten the internal validity of SCs. More elaborate designs, such as reversal design and multiple-baseline design, help to account for these validity issues and other plausible alternative explanations for changes in the data (Kratochwill et al., 2010). Furthermore, small sample sizes can also limit generalizability because results are case-specific. To aid in generalizability, researchers can replicate the same SC interventions across different school settings and principal characteristics. Multilevel modeling approaches can also calculate average treatment effects across studies to evaluate across-case effect sizes.

Despite the conspicuous lack of experimental designs in educational leadership studies, new advances in the field of SCs suggest they can provide a tool for assessing the impact of

principal interventions related to job satisfaction. While greater use of both experimental study designs and qualitative research methods can illuminate mechanisms and advance the field's understanding of what works, small-scale SCs can provide a more cost-effective, accessible method to begin a more robust conversation about the determinants of principal job satisfaction.

Conclusion

This dissertation began by highlighting a troubling trend among school leaders in the 21st century: high stress coupled with low satisfaction. Scholars have tracked the changing roles and responsibilities of principals and linked these changes to higher rates of turnover. Yet evidence from this dissertation points to a different narrative, one in which 95% of principals from this TALIS survey either agree or strongly agree that they are satisfied with their jobs. The administrative workload for principals in this internationally representative sample is not linked to lower job satisfaction, as measured by the four-question satisfaction scale. An increase in the proportion of higher needs students is not linked to lower job satisfaction on the scale. Principals who are given school resources, including a roster of consistent teachers throughout the year, are likely to report higher relative job satisfaction than those who suffer from higher rates of turnover. Which narrative is correct? Has the principalship become too complex to be sustainable, as the aforementioned 2012 Met Life study suggests? As Cohen and Mehta (2015) note, both narratives are true. Some principals in "niche reform" environments are feeling the pinch of demographically changing schools or pressures from various reform efforts (p. 645). As the U.S. and other countries face shortages of teachers and school leaders in the wake of the historic pressures placed on educators from COVID-19, scholars and policymakers should bear in mind evidence from this second narrative. True, the principalship is a demanding job and some practitioners do struggle in difficult schools. Yet districts and countries will face a

continued leadership vacuum if the pool of these potential school leaders only hear a narrative of hardship, pressures, and stress. Scholars and policymakers should instead promote the second narrative to the next generation of school leaders: namely, that school leadership can be satisfying job and fulfilling career.

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Tables and Figures

Table 1.

Studies of Principal Job Satisfaction with Satisfaction as the Dependent Variable

Study	Context	Sample	Theory	Method	Outcome Measure	Important Independent Variables	Results
Bacharach & Mitchell, 1983	US (New York)	95 principals	NA	Survey + ANOVA	Satisfaction with job, organization, and environment	Autonomy, bureaucracy, supervision	Positive organizational Climate, supervision, and autonomy predict job satisfaction.
Bauer & Brazer, 2019	US (South)	164 principals	NA	Survey within larger intervention study+ Regression	Intention to leave	Experience, social support, role ambiguity and overload, and leadership coaching	Social support predicts persistence. Principal isolation and role overload negatively predict persistence.
Bogotch & Riedlinger, 1993	US (New Orleans)	28 principals	NA	Survey+ ANOVA	Job Satisfaction	Social supports, tenure, stress	New principals report lower levels of stress and higher levels of support than older principals.
Borg & Riding, 1993	Malta	150 principals	NA	Survey + ANOVA	Job satisfaction	Demographics, school contexts, principal tasks	Interruptions, paperwork, lack of resources, lack of school maintenance and lack of staff are top stressors.
Brogan, Matthews & Neil, 2005	US (West)	128 principals	NA	Survey+ Regression	Task performance	Time, ratio of assistant principals to principals	Time spent after school, long hours, contributes to dissatisfaction.
Carr, 1994	Australia (South)	100 principals	Freud's dreams theory	Surveys, interviews chi-squared	Job satisfaction, principal stress	Principal dreams over the last two weeks	Top principals' stressors include lack of support supervisors, work demands and expectations, and difficult interpersonal relationships.
Chang, Leach & Anderman, 2015	US (Midwest)	1,501	Self-determination theory	Survey + hierarchical regression	Job satisfaction	Perception of support from supervisor, autonomy, commitment to district	Principals with less experience perceive less support for their autonomous decision-making and lower job satisfaction.
Chaplain, 2001	Great Britain (West Midlands)	36 principals	Antonovosky's stress model	Surveys and interviews	Job stress and job satisfaction	Job stress, personal factors	Autonomy and self-efficacy, collegiality, and other resources, are coping mechanism and therefore

							negatively related to stress.
Conley, Shaw & Glasman, 2007	US (California)	66 principals 87 assistant principals	NA	Surveys + ANOVA	Job growth, job satisfaction	Job, organizational, and personal characteristics	Weak association between personal characteristics and satisfaction. Strong positive association between job characteristics and satisfaction.
Cooper & Kelly, 1993	Great Britain	2638 principals	NA	Surveys + Regression	Job stress, job dissatisfaction	Demographics, principal roles, stress, mental health, and coping strategies	Females are more dissatisfied with the job. Males suffer more mental health issues. High school leaders report higher satisfaction than elementary school leaders.
Darmody & Smyth, 2011	Ireland	898	NA	Surveys+ Regression	Job stress, job satisfaction	Demographics, school composition, staff collaboration, school facilities	Adequate resources increase job satisfaction and reduced stress. Poor administrative support contributes to higher stress. Principals who consider teachers to be less open to developments and challenges reported higher stress.
Derlin & Schneider, 1994	US (Milwaukee)	333 principals	Two-factor model	Surveys + ANOVA	Job satisfaction	Teacher vs. principal satisfaction. Suburban vs. urban satisfaction	Urban principal satisfaction positively correlates with school climate, suburban principal satisfaction correlates with recognition, support.
DiPaola & Tschannen-Moran, 2003	US (Virginia)	1,543 principals	NA	Surveys + Descriptive statistics	NA	Training, employment conditions, scope of role, labor market supply-and-demand.	Principals report little time to be instructional managers.
Duke, 1988	US (Northwest)	4 principals	NA	In-depth interviews	Job satisfaction	Pay, supervision, growth opportunities, responsibilities.	Principals' own successes, creativity, compassion, and high expectations led to feelings of dissatisfaction and disappointment in not accomplishing tasks.

Eckman, 2004	US (Illinois, Minnesota, Wisconsin)	339 principals	NA	Surveys + ANOVA	Job satisfaction	Role conflict, role commitment, personal attributes, demographics	No gender difference on job satisfaction.
Fansher & Buxton, 1984	US	266 principals	NA	Surveys + ANOVA	Job satisfaction	Demographics, school factors, personal factors	Female HS principals report higher levels of job satisfaction if they were older, from a larger school, and if they experienced more encouraging feedback from students.
Federici & Skaalvik, 2012	Norway	1,818	NA	Survey + SEM	Job satisfaction, burnout	Self-efficacy, motivation to quit	There is a positive relationship between self-efficacy and job satisfaction and motivation to quit but negatively related to burnout. There is a negative relationship between burnout and job satisfaction.
Fraser & Brock, 2006	Australia (New South Wales)	20 principals	NA	Narrative surveys, telephone interview	Job satisfaction	Isolation, support, relationships	Pay, isolation, staff issues, parents, lack of recognition are positively related to dissatisfaction.
Friedman, Friedman, & Markow, 2008	US (29 districts)	431	NA	Surveys + Regression	Job satisfaction	Communication, relationships, school climate, support, technology, career satisfaction, decision-making	Negative student behavior, low decision making, and poor school facilities negatively predict job satisfaction.
Friesen, Holdaway, & Rice, 1983	Canada (Alberta)	327 principals	Two-Factor	Open-ended survey + Content analysis	Job satisfaction	Demographics, teachers, students, parents, board	Strong school climate, string organizational climate, high achievement, and higher principal responsibility positively contribute to satisfaction.
Graham & Messner, 1998	US (Midwest)	227 principals	Two-factor theory	Survey + Chi-squared	Job satisfaction	Working conditions, supervisors, pay, fringe benefits, colleagues, responsibilities	Principals in small and large schools reported higher stress than mid-sized schools. Females more dissatisfied. Younger principals more dissatisfied.
Guglielmi, Simbula, Schaufeli, & Depolo, 2012	Italy	224 principals	Job-Demands Resources Model	SEM	Job Satisfaction	Job demands, work engagement, burnout, resources, autonomy	Demands mediated workaholism and burnout. Resources mediated self-efficacy and work engagement and burnout.

Gunn & Holdaway, 1986	Canada (Alberta)	133 principals	Lock's Job Satisfaction Theory	Survey with open-ended questions, interviews + Regression and content analysis	Job Satisfaction, perceptions of effectiveness	Leader and school effectiveness, school and principal characteristics	Principals who felt a sense of accomplishment reported higher satisfaction.
Hardman, Leary, Toth, 1996	US (West Virginia)	162 principals	Two-factor theory	Survey + ANOVA	Job satisfaction	Supervision, decision making, demographics, marital status	Job satisfaction and age have a positive relationship.
Hill, 1993	United Kingdom	287 principals	NA	Survey + ANOVA	Job satisfaction	Job characteristics, demographics	Inter-personal relationships and autonomy positively contribute to satisfaction. Paperwork, work overload and low status contributed to dissatisfaction.
Iannoe, 1973	US (New York)	40 principals	Two-Factor	Semi-structured interviews	Job satisfaction	School climate, achievement, recognition	School climate, achievement, and recognition are drivers of job dissatisfaction.
Johnson & Holdaway, 1994	Canada (Alberta)	195	Locke	Surveys, Interviews + Regression	Job satisfaction	School climate, relationships, salary	Working relationships with students and teachers rated high on importance for job satisfaction.
Knutton & Mycroft, 1986	Great Britain	154	NA	Surveys + ANOVA	Job satisfaction, job stress	Demographics, school variables such as type, size.	Stress is not related to demographic and school variables, such as type of school. Lack of time and large classes contributed to stress.
Liu & Bellibas, 2018	TALIS 2013 Dataset: 32 countries	6,045	Three-Component Model	TALIS + Hierarchical SEM	Job satisfaction, organizational commitment	Staff mutual respect, school safety, school resources, organizational structure, organizational support,	Acknowledgement of effort, pay, cooperation positively predict satisfaction. Bureaucracy, paperwork predicts dissatisfaction.
Maforah & Schulze, 2012	South Africa (Northwest)	30 principals	Evan's Satisfaction of Teachers and Academics Theory	Survey, semi-structured interviews	Job satisfaction	Intrinsic and relational aspects of the principalship	Lack of autonomy, lack of recognition, ill-disciplined students, uncommitted staff members, uninvolved parents, insufficient physical resources and poor salaries contributed to dissatisfaction.
Mercer, 1993	United Kingdom	28 principals	Lawler's Needs Theory / Maslow's Hierarchy	Nominal Group Technique (focus groups)	Job satisfaction	Organizational and personal aspects of principalship	Principals identify and ranked common satisfiers and dissatisfiers.
Mercer, 1997	Great Britain (Northeast)	39 principals	Locke	Open interview + grounded theory	Job satisfaction	Relationships, management, higher-order needs	The need to balance many competing needs contributes to dissatisfaction. Self-

							efficacy and collegiality contribute to satisfaction.
Miskel, DeFrain, & Wilcox, 1980	US (Midwest)	120 principals	Expectancy Work Motivation	Surveys + Regression Analysis	Job Satisfaction	Motivation, central life interest, voluntarism	Expectancy motivation force, life interests, and voluntarism explain most of the variance in job satisfaction.
Miskel, Glasnapp, & Hatley, 1975	US (Kansas)	119 principals	Two-Factor	Surveys + Regression Analysis	Job satisfaction	voluntarism, life interests	Administrators who report high primary life interests in the principalship report higher job satisfaction.
Richford & Fortune, 1984	US (Virginia)	174 principals	NA	Surveys + Regression	Job satisfaction	Locus of control, manipulativeness	Principals who report higher levels of control report lower endorsement of manipulativeness and vis versa.
Rinehart, Winter, Keedy & Bjork, 2002	US (Kentucky)	587 principals	NA	Survey+ Regression + hierarchical regression	Job satisfaction	Demographics, likelihood of pursuing superintendence	Principals rated work climate and job security as incentives to remain in the principalship
Saiti & Fassoulis, 2012	Greece	123 principals	NA	Survey + ANOVA	Job satisfaction	Role, pay, environment, bureaucracy, promotion, school goals	Pay, recognition, and acknowledgement by superiors positively predicts satisfaction
Sarros, 1988	Canada (Western)	128 principals	NA	Survey + ANOVA	Job satisfaction, burnout	Status, interpersonal relationships, authority, advancement, security, workload, salary	Higher work stress and low satisfaction with workload predicts higher responses to emotional exhaustion and burnout.
Savery & Detiuk, 1986	Australia (Western)	178	Behling and Holcombe model	Survey + ANOVA	Job satisfaction	Pay, security, promotion, challenge, interest, hours, autonomy, responsibility, cooperation	Longer hours predicted stress, role overload and role conflict predict dissatisfaction and stress.
Schmidt, 1976	US (Chicago)	74 principals	Two-factor	Structured interviews	Job Satisfaction	Achievement, recognition, teacher conflicts	Achievement and recognition supported satisfaction. Demographic variables are not significant.
Sparkes & McIntire, 1988	Canada (Newfoundland and Labrador)	417 principals	NA	Survey + Regression	Job satisfaction	School and community demographics	Principals of large schools (16+ teachers) in large communities (1,500+ population) exhibited greater job satisfaction than those in smaller schools and communities
Sutter, 1996	US (Ohio)	316 assistant principals	NA	Survey + Regression	Job satisfaction	Demographics, job accomplishment, opportunities for advancement	Principals who believed they were accomplishing, could advance, and were using their talents are more satisfied than those at lower

							levels of the former variables.
Trusty & Sergiovanni, 1966	US (Midwest)	32 principals	Two-Factor	Survey + ANOVA	NA	Esteem, autonomy, self-actualization	Administrators are less satisfied with opportunities than teachers. Demographics are positively related to esteem, autonomy, and self-actualization
Vang, 2015	US (California)	275	Locke	Survey + open-ended responses + hierarchical regression	Job satisfaction	Building enrollment, expenditures, student achievement	All variables failed to be significant predictors of satisfaction. Qualitative responses show dissatisfaction with NCLB mandates.
Wang, Pollock, & Hausemwangan 2018	Canada (Ontario)	1,423 principals	Two-factor theory	Survey + Regression	Job satisfaction	Respect from others, work intensification	Respect from teachers and superintendents, good organizational structure, positively predict satisfaction. Unclear directives and pressures to adopt to new programs positively predict dissatisfaction
Webb, Royal, & Nash, 2015	US (Kentucky)	478	Quarstein's situational characteristics/ occurrences theory	Survey + Regression	Job satisfaction	Economic attributes, psychological attributes, tasks and responsibilities	Economic attributes are not significant sources of dissatisfaction, psychological attributes are significant positive sources of satisfaction. Tasks and responsibilities sources of biggest dissatisfaction.
White, Brown, Hunt & Klosterman, 2011	US (Illinois)	916 principals	NA	Survey + Descriptive Statistics	Job satisfaction and priorities	Time spent in school, various principal tasks, stress, accountability, salary	Instructional tasks, internal relations are the highest appealing characteristics of the job. Stress, accountability, work hours, and job security are the least appealing.
Wong, Cheuk, & Rosen, 2000	Hong Kong	108 principals	NA	Survey + Regression	Job stress, job satisfaction	Emotional support from supervisors, stress	Informational support can buffer job stress. Support can increase satisfaction.

Appendix A: Descriptive Statistics

Table 2.
Job Satisfaction Confirmatory Factor Analysis

Item	Observations	Correlation	Interitem covariance	Alpha if Item Were Deleted	Factor1	Uniqueness
tc3g44e	15025	0.7729	.159371	0.7086	0.6345	0.5365
tc3g44g	15033	0.7643	.1622611	0.7181	0.6154	0.5593
tc3g44i	15035	0.7256	.1815973	0.7264	0.6486	0.5082
tc3g44j	15026	0.7987	.1538897	0.6724	0.7382	0.4206
Test scale				0.7627		

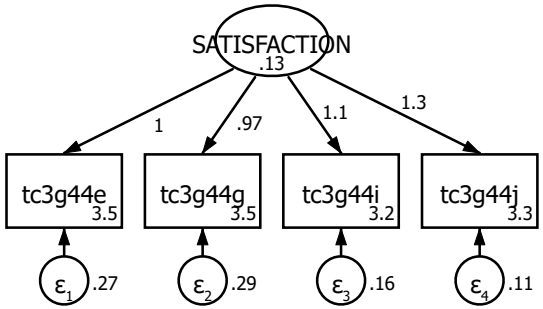

Figure 5. Unstandardized Factor Loadings (GSEM) of SATISFACTION

Table 3.
SEM Standardized Results for Satisfaction Scale

Measurement	Standardized Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
I enjoy working at this school (tc3g44e)						
Satisfaction	0.57	0.01	78.25	0.00	0.56	0.59
Intercept	5.51	0.03	167.64	0.00	5.45	5.58
I would recommend this school as a good place to work (tc3g44g)						
Satisfaction	0.55	0.01	72.46	0.00	0.53	0.56
Intercept	5.41	0.03	167.45	0.00	5.35	5.48
I am satisfied with my performance in this school (tc3g44i)						
Satisfaction	0.71	0.01	127.91	0.00	0.70	0.72
Intercept	5.80	0.03	168.13	0.00	5.73	5.86
All in all, I am satisfied with my job (tc3g44j)						
Satisfaction	0.83	0.01	152.57	0.00	0.82	0.84
Intercept	5.73	0.03	168.03	0.00	5.67	5.80
Var (e.tc3g44e)	0.67	0.01			0.66	0.69
Var (e.tc3g44g)	0.70	0.01			0.68	0.72
Var (e.tc3g44i)	0.50	0.01			0.49	0.52
Var (e.tc3g44j)	0.31	0.01			0.29	0.33
Var (Satisfaction)	1.00	.			.	.

Table 4.
GSEM Unstandardized Results for Satisfaction Scale

Standardized	Coef.	Std. Err.	*Z*	*P>z*	95% Conf. Interval
I enjoy working at this school (tc3g44e)					
Satisfaction	1	(constrained)			
Intercept	3.51	0.005	675.37	0.00	3.50, 3.52
I would recommend this school as a good place to work (tc3g44g)					
Satisfaction	0.96	0.01	54.13	0.00	0.93, 1.00
Intercept	3.48	0.01	663.38	0.00	3.47, 3.49
I am satisfied with my performance in this school (tc3g44i)					
Satisfaction	1.08	0.02	54.77	0.00	1.04, 1.12
Intercept	3.25	0.00	710.50	0.00	3.33, 3.34
All in all, I am satisfied with my job (tc3g44j)					
Satisfaction	1.32	0.02	54.98	0.00	1.27, 1.36
Intercept	3.33	0.00	702.88	0.00	3.32, 3.34
Var (e.tc3g44e)	0.27	0.01			0.26, 0.28
Var (e.tc3g44g)	0.28	0.01			0.28, 0.29
Var (e.tc3g44i)	0.15	0.01			0.15, 0.16
Var (e.tc3g44j)	0.10	0.01			0.10, 0.11
Var (Satisfaction)	0.13	0.00			0.12, 0.14

Table 5.
Descriptive Statistics of Weighted Continuous and Binary Variables for TALIS 2018

	N	*Mean*	*SD*	*Min*	*Max*
Dependent Variable					
Principal job satisfaction	14,976	9.58	1.85	0	12
Demands					
Administrative time	14717	27.28	14.43	0	95
Workload stress	14,720	9.88	1.96	2.49	16.11
Barriers to PD	15,106	1.62	1.09	0	21
Student safety issues	15,107	6.97	2.02	2.27	20.32
Teacher turnover	15,080	0.09	0.17	0	13
Resources					
Trust in teachers	15,131	12.11	2.04	1.98	17.06
Organizational innovation	15,059	12.50	2.07	2.07	17.66
Pedagogical support ratio	15,163	16.09	20.80	0	436
Distributed leadership	15,118	11.98	2.06	0.54	18.12
Collaboration	14,283	10.79	2.14	3.16	16.92
PD opportunities	14,057	1.73	1.09	0	10
Support personnel	15,163	16.09	20.80	0	436
Management personnel	14,872	6.87	5.46	0	150
Satisfaction with profession	15,054	12.02	1.99	2.32	12.04
Climate Resources (CWC)	15,458	0	1.40	0	2.0
Job Resources (CWC)	15,458	0	0.68	0	2.0
Student Demands (CWC)	15,458	0	0.72	0	2.0
Level 1 Control Variables					
Female	15,406	47.18	0.49	0	1
Years teacher	14,983	18.89	10.76	0	49
Years principal at the school	15,201	6.41	6.44	0	50

Table 5.
Descriptive Statistics of Weighted Continuous and Binary Variables for TALIS 2018

Public	14,527	78.36		0	1
Primary and preschool	5,248	0.23			
Only primary	7,840	0.34			
Only Secondary	5,717	0.25			
Combined Preschool, primary, and secondary	4,039	0.18			
Student teacher ratio	14,901	14.01	25.17	0.05	549
Level 2- Country Variables					
Principal salaries	8,979	46,011	17,501	19,183	85,798
Relative earnings	8,586	0.97	0.22	0.52	1.42
Spending per student	9,714	8,199	2,674	2,961	12,618
ED spending as percent GDP	9,519	21.10	3.49	14	30
Autonomy	9,519	31.97	20.65	8	92
Societal value of the profession	15,980	2.42	0.47	1.51	3.50
Number of Countries	48				

Table 6.
Descriptive Statistics of Weighted Ordinal Demand and Resource Variables from TALIS 2018

Demands	*N*					
		Not a problem	*A bit of a problem*	*A problem*		
Shortage of materials	15,097	60.70	31.66	7.64		
Shortage of teachers	15,098	52.92	37.86	9.22		
		Never	*Less than once every two years*	*Once every two years*	*Once per year*	*Twice or more per year*
External evaluation	15,021	34.52	26.60	8.61	20.10	10.16
		None	*1% to 10%*	*11% to 30%*	*31% to 60%*	*More than 60%*
SES students	14,663	12.1	44.85	26.08	10.98	5.92
Non-native students	14,501	42.68	40.00	10.90	3.85	2.56
Special needs students	14,679	13.26	66.40	17.94	2.00	0.40

Resources	*N*				
		None	*Mixed Autonomy*	*Full autonomy*	
Autonomy for staffing	15,117	28.62	16.74	54.63	
Autonomy for budgeting	14,910	60.76	8.32	30.93	
		Strongly disagree	*Disagree*	*Agree*	*Strongly agree*
Satisfied with pay	15,042	14.37	35.05	40.99	9.61
Satisfied with benefits	15,012	8.60	26.23	52.66	12.51

Table 6.
Descriptive Statistics of Weighted Ordinal Demand and Resource Variables from TALIS 2018

Controls	*N*				
		Under 40	*40-49*	*50-59*	*60+*
Principal age groups	15,149	8.21	32.23	43.84	15.74
		BA	*MA*	*Doctoral*	
Principal education	14,559	43.16	52.72	4.13	
		Rural (up to 3,000)	*Suburban (3,001-100,000)*	*City (100,000+)*	
Urbanicity	15,329	16.06	41.65	42.29	

Table 7.
Country Variables

Country Name	Code	Total student population (x1000)	Response Rate	Number of principals	Principal Salaries	Principal Relative Earnings	Student Spending	Education Spending as Percent of GDP	Percent Decisions Made by School
Argentina	ABA	878	49	78					
Alberta	CAB	1,038	58	129	69,383.86	1.21	9,207.31	21	15
Australia	AUS	2,680	75	230	71,344.52	1.18	10,013.24	21	52
Austria	AUT	1,483	100	277	47,674.27	0.60	12,298.60	24	46
Belgium	BEL	1,169	96	307	49,324.32	1.31	10,645.75	23	63
Belgium	BFL	721	94	188					
Brazil	BRA	52,187	95	184					
Bulgaria	BGR	1,730	100	200					
Chile	CHL	5,214	88	169	32,495.77	0.93	5,370.99	22	48
Chinese Taipei	TWN	935	100	202					
Colombia	COL	10,392	70	141	21,195.80	1.04	3,323.06	23	33
Croatia	HRV	896	96	188					
Cyprus	CYP	99	89	88					
Czech Republic	CZE	2,606	99	218	22,027.06	0.52	5,104.02	14	48
Denmark	DNK	1,457	71	140	58,961.49	0.84	11,355.00	23	29
UK	ENG	3,990	82	157	56,445.97	1.09	11,188.21	20	65
Estonia	EST	389	100	195			6,872.48		
Finland	FIN	706	100	148	48,060.30	0.90	9,447.33	22	33
France	FRA	6,770	98	195	39,013.60	0.77	7,603.36	18	10
Georgia	GEO	2,151	92	177					
Hungary	HUN	2,640	93	182	23,271.36	0.61	5,453.68	20	29
Iceland	ISL	136	74	101	48,194.88		11,757.25	22	60
Israel	ISR	1,196	94	184	50,696.20	1.16	8,498.09	22	46
Italy	ITA	5,622	99	190	74,984.11	1.34	7,991.18	20	30
Japan	JPN	10,071	99	195	64,547.18		8,978.14	22	21
Kazakhstan	KAZ	6,302	100	331					

South Korea	KOR	3,134	78	150			11,028.85	30	15
Latvia	LVA	653	91	136	19,183.53	1.10	6,452.50	25	64
Lithuania	LTU	833	100	195	19,936.14	0.86	6,052.52	20	42
Malta	MLT	58	93	54					
Mexico	MEX	16,327	97	193	25,839.93	1.42	2,961.22	15	17
Netherlands	NLD	524	86	125	50,598.62	0.66	8,609.41	17	92
New Zealand	NZL	1,732	92	189	50,802.06	0.97	8,286.75	22	52
Norway	NOR	1,091	81	162			12,618.51	25	15
Portugal	PRT	1,255	100	200	37,125.03	1.14	7,689.08	25	15
Romania	ROU	4,658	100	199					
Russian Federation	RUS	31,948	100	230					
Saudi Arabia	SAU	6,119	96	192					
Shanghai–China	CSH	630	100	198					
Singapore	SGP	193	98	167					
Slovak Republic	SVK	1,593	90	180	22,475.24	0.57	6,922.28	22	44
Slovenia	SVN	448	79	119	50,739.24	1.13	8,621.39	26	50
South Africa	ZAF	8,026	91	169					
Spain	ESP	6,861	99	396	47,061.21	1.08	7,652.70	21	10
Sweden	SWE	1,739	89	171	62,288.80	1.16	11,337.57	23	35
Turkey	TUR	16,100	99	196	26,488.70	0.86	4,168.23	16	8
UAE	ARE	521	91	476					
United States	USA	65,095	78	164	85,798.01	1.03	12,184.09	21	16
Vietnam	VNM	10,799	100	196					

Table 8.

Matrix of Correlations Between Dependent and Control Variables

Variables	Sat	Female	Age	Exp teach	Exp school	Ed	Sch Loc	Preschool	Primary	Secondary	ST Ratio
Sat	1.00										
Female	0.05*	1.00									
Age	0.06*	-0.02	1.00								
Exp teach	0.02	0.05*	0.42*	1.00							
Exp school	0.10*	-0.00	0.35*	0.09*	1.00						
Ed	0.03*	0.01	0.08*	0.05*	0.06*	1.00					
Sch Loc	0.05*	0.01	0.07*	0.06*	-0.06*	0.05*	1.00				
Preschool	0.07*	0.09*	-0.03*	-0.01	0.03*	0.03*	-0.00	1.00			
Primary	0.04*	0.18*	-0.01	0.01	0.09*	0.02*	-0.07*	0.60*	1.00		
Secondary	0.03*	-0.07*	0.05*	-0.01	0.07*	0.18*	0.05*	-0.16*	-0.29*	1.00	
ST Ratio	-0.00	-0.01	-0.00	-0.00	-0.02	-0.02	0.04*	0.03*	0.02*	-0.03*	1.00
Public	-0.09*	-0.04*	0.01	-0.01	-0.06*	-0.03*	-0.23*	-0.28*	-0.17*	-0.09*	-0.00

Notes. * shows significance at the .01 level. SAT = Satisfaction. Ed = Education. Sch Loc = School Location. ST Ratio = Student-Teacher Ratio. Exp = Experience.

Table 9.

Matrix of Correlations Between Dependent and Demands Variables

Variables	Sat	Admin time	Accountability	Stress	Barrier	Short mat	Short teach	SES	Immigrant	Sped	Turnover
Sat	1.00										
Admin time	-0.06*	1.00									
Accountability	0.00	-0.08*	1.00								
Stress	-0.17*	0.14*	0.03*	1.00							
Barrier	-0.21*	0.04*	-0.01	0.24*	1.00						
Short mat	-0.05*	-0.01	0.08*	0.12*	0.19*	1.00					
Short teach	-0.05*	0.01	0.04*	0.15*	0.16*	0.40*	1.00				
SES	-0.02	0.04*	-0.02	0.09*	0.08*	0.15*	0.14*	1.00			
Immigrant	0.02*	0.04*	-0.12*	0.03*	0.00	-0.09*	-0.01	0.24*	1.00		
Sped	-0.01	0.05*	-0.12*	0.04*	-0.04*	-0.07*	0.01	0.28*	0.28*	1.00	
Turnover	-0.04*	-0.02	0.02*	0.02	0.08*	0.03*	0.05*	0.02	0.00	0.00	1.00
Violence	-0.16*	0.02	-0.02	0.16*	0.10*	0.08*	0.10*	0.21*	0.12*	0.14*	-0.01

Notes. * shows significance at the .01 level SAT = Satisfaction. Short mat = Shortage of Materials. Sped = Special Education.

Table 10.
Matrix of Correlations Between Dependent and Resource Variables

Variables	Sat	PD	Salary	Benefits	Autonomy Staff	Autonomy Budget	Sat Profession	Dist Lead	Trust	Innovation	Support Ratio	Admin Ratio
Sat	1.00											
PD	0.12*	1.00										
Salary	0.21*	0.09*	1.00									
Benefits	0.29*	0.10*	0.53*	1.00								
Autonomy Staff	0.02*	0.13*	0.06*	0.14*	1.00							
Autonomy Budget	0.03*	0.06*	0.14*	0.20*	0.54*	1.00						
Sat Profession	0.48*	0.12*	0.20*	0.29*	0.06*	0.05*	1.00					
Dist Lead	0.20*	0.14*	0.01	0.04*	-0.09*	-0.08*	0.12*	1.00				
Trust	0.28*	0.10*	0.09*	0.15*	0.09*	0.05*	0.16*	0.19*	1.00			
Innovation	0.31*	0.13*	0.05*	0.11*	-0.00	-0.00	0.17*	0.31*	0.32*	1.00		
Support ratio	0.00	-0.02*	-0.04*	-0.04*	-0.12*	-0.12*	-0.00	0.02*	-0.02	-0.01	1.00	
Admin ratio	-0.01	-0.07*	-0.08*	-0.08*	-0.09*	-0.12*	-0.02	0.01	-0.04*	-0.02	0.29*	1.00
Collaboration	0.21*	0.14*	0.09*	0.13*	0.07*	0.06*	0.14*	0.21*	0.41*	0.24*	0.01	-0.02

Notes. * shows significance at the .01 level SAT = Satisfaction. PD = Professional Development. Dist Lead = Distributed Leadership.

Table 11.
Average Country Job Satisfaction

Country	*Mean*	*SD*	*Country*	*Mean*	*SD*
ABA	9.86	1.69	ITA	8.93	1.90
ARE	9.9	2.07	JPN	8.1	1.92
AUS	9.9	1.83	KAZ	9.46	1.67
AUT	10.3	1.70	KOR	9.38	2.12
BEL	9.13	1.66	LTU	9.47	1.58
BFL	9.19	1.47	LVA	9.42	1.42
BGR	9.32	1.75	MEX	10.38	1.79
BRA	9.73	1.88	MLT	9.57	1.46
CAB	9.91	1.65	NLD	9.69	1.66
CHL	10.26	2.06	NOR	9.62	1.52
COL	10.86	1.57	NZL	9.67	1.67
CSH	8.87	1.76	PRT	9.97	1.46
CYP	9.12	1.87	ROU	9.74	1.90
CZE	9.19	1.45	RUS	9.23	1.64
DNK	10.19	1.69	SAU	9.2	2.14
ENG	9.65	1.68	SGP	10.17	1.74
ESP	10.15	1.67	SVK	9.15	1.44
EST	9.16	1.79	SVN	9.15	1.56
FIN	9.17	1.75	SWE	9.54	1.77
FRA	8.93	1.88	TUR	9.32	2.11
GEO	9.19	1.78	TWN	9.34	1.99
HRV	9.53	1.70	USA	10.18	1.48
HUN	9.71	1.49	VNM	9.43	1.75
ISR	10.05	1.66	ZAF	8.83	2.06
			Total	9.58	1.86

Notes. Consult Table 7 for full country names.

Table 12.
Model Buildup Estimates for Multilevel Resources Model

	Model 1 Null Model	Model 2 + Resource Variables	Model 3 + Control Variables	Model 4 + Random Effects
Sat	9.55***	9.55***	9.32***	9.33***
	(0.07)	(0.07)	(0.09)	(0.09)
Distributed Leadership$_{cwc}$		0.06***	0.06***	0.06***
		(0.01)	(0.01)	(0.01)
Trust$_{cwc}$		0.11***	0.11***	0.11***
		(0.01)	(0.01)	(0.01)
Innovation$_{cwc}$		0.15***	0.14***	0.14***
		(0.01)	(0.01)	(0.01)
Collaboration$_{cwc}$		0.03***	0.03***	0.02***
		(0.01)	(0.01)	(0.01)
PD$_{cwc}$		0.04***	0.04***	0.04***
		(0.01)	(0.01)	(0.01)
Salary$_{cwc}$		0.08***	0.08***	0.07***
		(0.02)	(0.02)	(0.02)
Benefits$_{cwc}$		0.23***	0.23***	0.21***
		(0.02)	(0.02)	(0.02)
Satisfaction with Profession$_{cwc}$		0.36***	0.36***	0.37***
		(0.01)	(0.01)	(0.01)
Female			0.06**	0.06**
			(0.02)	(0.02)
Age group			0.02	0.01
			(0.02)	(0.02)
Exp school			0.01***	0.01***
			(0.00)	(0.00)
Rural			-0.05	-0.05
			(0.03)	(0.04)
Suburban			-0.001	0.00
			(0.03)	(0.03)
Random Effects Variance Components				
(Variance (r_{ij}))	3.22	2.10	2.09	2.04
τ_{00} (Variance of Intercept)	0.22	0.22	0.22	1.90
τ_{11} (Variance of Salary Slopes)				0.00 (0.00)
τ_{12} (Variance of Benefits Slopes)				0.01 (0.00)
τ_{13} (Variance of Satisfaction with Profession Slopes				0.00 (0.00)
τ_{01} (Salary Random Effects Covariance)				-0.11 (0.03)

τ_{02} (Benefits Random Effects Covariance)				0.00 (0.03)
τ_{03} (Satisfaction with Profession Random Effects Covariance)				-0.10 (0.02)
Variance Explained				
σ^2		0.35	0.35	0.02
τ_{00}		0.00	0.00	-7.64
Model Fit				
Model Deviance	62120.90	55529.58	55471.4	55224.26
Log Likelihood	-31060.45	-27764.79	-27735.2	-27612.13
Estimated Parameters	3	11	16	25
AIC	62126.90	55551.58	55502.41	55274.25
BIC	62132.51	55572.16	55524.74	55465.4
LR Test		0.00	0.00	0.00
ICC	0.06			
Observations	15,458	15,458	15,458	15,458
Number of Groups	48	48	48	48

Notes. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Models tested using FEML/FIML. Variance explained tested against the null model. LR tested against previous model. Fixed effects tested with t-test. Hypotheses for fixed effects are: parameter = 0 versus parameter 0; *** = significant at p < 0.001, ** = significant at p < 0.01 * = significant at p = 0.05. AIC =Akaike's information criterion, BIC = Bayesian information Criterion. LR test = log likelihood ratio test, ICC = intraclass correlation.

Table 13.
Model Buildup Estimates for Multilevel Demands Model

	Model 1.1 Null Model	Model 2.1 + Demand Variables	Model 3.1 + Control Variables	Model 4.1 + Random Effects
Sat	9.55***	9.55***	9.01***	9.03***
	(0.07)	(0.07)	(0.10)	(0.10)
Admin Time$_{cwc}$		-0.01***	-0.01***	-0.01***
		(0.00)	(0.00)	(0.00)
Accountability$_{cwc}$		0.04***	0.04***	0.04***
		(0.01)	(0.01)	(0.01)
Stress$_{cwc}$		-0.08***	-0.08***	-0.08***
		(0.01)	(0.01)	(0.01)
Barrier$_{cwc}$		-0.32***	-0.30***	-0.30***
		(0.01)	(0.01)	(0.01)
Short Teachers$_{cwc}$		-0.06***	-0.05**	-0.05**
		(0.02)	(0.02)	(0.02)
Violence$_{cwc}$		-0.12***	-0.12***	-0.12***
		(0.01)	(0.01)	(0.01)
Turnover$_{cwc}$		-0.25***	-0.19**	-0.59***
		(0.08)	(0.08)	(0.16)
Female			0.09***	0.09***
			(0.03)	(0.03)
Age group			0.06***	0.05***
			(0.02)	(0.02)
Experience school			0.02***	0.02***
			(0.00)	(0.00)
Rural			-0.21***	0.18***
			(0.03)	(0.02)
Suburban			-0.04	-0.05
			(0.03)	(0.03)
Random Effects Variance Components				
σ^2 (Variance (r_{ij}))	3.22	2.95	2.93	2.91
τ_{00} (Variance of Intercept)	0.22	0.22	0.22	0.25
τ_{11} (Variance of Violence Slopes)				0.00 (0.00)
τ_{12} (Variance of Turnover Slopes)				0.36 (0.21)
τ_{01} (Violence Random Effects Covariance)				-0.00 (0.00)
τ_{02} (Turnover Random Effects Covariance)				-0.02 (0.09)
Variance Explained				
σ^2		0.08	0.09	0.01

τ_{00}		0.00	0.00	-0.01
Model Fit				
Model Deviance	62120.90	60764.12	60637.86	60610.02
Log Likelihood	-31060.45	-30382.06	-30318.93	-30305.01
Estimated Parameters	3	10	15	20
AIC	62126.90	60784.12	60667.86	60650.02
BIC	62132.51	60802.83	60782.55	60802.94
LR Test		0.00	0.00	0.00
ICC	0.06			
Observations	15,458	15,458	15,458	15,458
Number of Groups	48	48	48	48

Notes. *** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses. Models tested using FEML/FIML. Variance explained tested against the null model. LR tested against previous model. Fixed effects tested with t-test. Hypotheses for fixed effects are: parameter = 0 versus parameter 0; *** = significant at p < 0.001, ** = significant at p < 0.01 * = significant at p = 0.05. AIC =Akaike's information criterion, BIC = Bayesian information Criterion. LR test = log likelihood ratio test, ICC = intraclass correlation

Table 14.
(Poor) Factor Loadings for 4-Factor EFA Model

Questions	Question Wording	Theory Driven Classification	ICC	Factor 1	Factor 2	Factor 3	Factor 4
~~1. Short Material*~~	~~To what extent is this school's capacity to provide quality instruction currently hindered by a shortage or inadequacy of instructional materials?~~	D – S	0.19				
2. Short Teachers*	To what extent is this school's capacity to provide quality instruction currently hindered by shortage of qualified teachers?	D – S	0.14				
3. SES	Please estimate the broad percentage of students in this school from socio-economically disadvantaged homes	D – S	0.20				0.54
4. Immigrant	Please estimate the broad percentage of students in this school with special needs	D – S	0.30				0.47
5. SPED	Please estimate the broad percentage of students in this school with special needs	D – S	0.32				0.56
~~6. Turnover~~	~~The percent of teachers who permanently left this school during the last 12 months~~	D – S	0.05				
~~7. Violence*~~	~~In this school, how often does student bullying, student physical injury by violence, or intimidation or verbal abuse of teachers occur?~~	D – S	0.01				
~~8. Admin Time~~	~~On average throughout the school year, what percentage of time in your role as a principal do you spend on the following tasks in this school?~~	D – P	0.09				
~~9. Accountability~~	~~On average, how often is each teacher formally appraised in this school by the external individuals or bodies?~~	D – P	0.19				
~~10. Stress*~~	~~Thinking about your job at this school, to what extent are the following sources of stress in your work?~~	D – P	0.01				
11. Barriers to PD	How strongly do you agree or disagree that the following present barriers to your participation in professional development?	D – P	0.14				
12. Distributed Leadership*	To what extend does the school provide staff with opportunities to actively participate in school decisions? Parents or guardians? Students?	R – S	0.00			0.47	
13. Trust*	To what extent do teachers understand and implement the school's curriculum? To what extent do teachers hold high expectations for achievement?	R - S	0.00			0.58	
14. Innovation*	To what extend does the school identifies the need to do things differently? Quickly responds to changes? Accepts new ideas? Makes assistance readily available?	R - S	0.00			0.55	

15. Collaboration*	To what extend is there a collaborative school culture which is characterized by mutual support? Does the staff share a common set of beliefs about teaching? Does school encourage staff to lead initiatives? Do staff rely on each other?	R - S	0.01			0.51
~~16. Support Ratio~~	~~Personnel for pedagogical support, irrespective of the grades/ages they support~~	R - S	0.21			
~~17. Administrator Ratio~~	~~Includingprincipals,assistantprincipals,andothermanagement staffwhosemain activity is management~~	R - S	0.27			
~~18. PD Opportunities~~	~~During the last 12 months, did you participate in any of the following professional development activities aimed at you as a principal?~~	R - P	0.11			
19. Satisfaction with Salary	How strongly to you agree or disagree with the following: "I am satisfied with the salary I receive from my work"	R - P	0.10		0.66	
20. Satisfaction with Benefits	How strongly to you agree or disagree with the following: "Apart from my salary, I am satisfied with the terms of my principal contract (e.g. benefits, work schedule)."	R - P	0.10		0.78	
21. Satisfaction with the Profession	We would like to know how you generally feel about your job. How strongly do you agree or disagree that the advantage of the profession clearly outweighs the disadvantages? That you would still choose this profession?	R - P	0.00			
22. Autonomy with Staffing*	Regarding this school, who has a significant responsibility for appointing, hiring, dismissing or suspending teachers?	R - P	0.45	0.76		
23. Autonomy with Budgeting*	Regarding this school, who has a significant responsibility for deciding on budget allocations?	R - P	0.32	0.56		

Note. Subscales based on Chapter 2 literature review and Chapter 3 independent variable discussion. D – S = Demands, schools. D – R = Demands, principals. R- S = Resources, schools. R – P = Resources, principals. ICC= Intraclass correlations. Variables with factor loadings below acceptable thresholds (0.40) are crossed out.

Table 15.
Factor Loadings for 2-Factor Demands EFA Model

Questions	Theory Driven Classification	Factor 1 Student demands	Factor 2
1. Short Material*	D - S		0.57
2. Short Teachers*	D - S		0.53
3. SES	D - S	0.48	
4. Immigrant	D - S	0.46	
5. SPED	D - S	0.49	
~~6. Turnover~~	~~D - S~~		
7. Violence*	D - S	0.40	
~~8. Admin Time~~	~~D - P~~		
~~9. Accountability~~	~~D - P~~		
~~10. Stress*~~	~~D - P~~		
~~11. Barriers to PD~~	~~D - P~~		

Notes. Model fit for "student demands" factor with student SES, immigrant, SPED, and violence: CFI = 0.98, RMSEA < 0.05, SRMR = 0.02, α = 0.62). Model fit for school demands" of shortages of materials and shortages of students not interpreted (just-identified model with zero degrees of freedom). Variables with factor loadings below acceptable thresholds (0.40) are crossed out.

Table 16.
Factor Loadings for 2-Factor Resources EFA Model

Questions	Theory Driven Classification	Factor 1	Factor 2 School Climate	Factor 3 Job Resources
1. Distributed Leadership*	R – S		0.44	
2. Trust*	R - S		0.58	
3. Innovation*	R - S		0.54	
4. Collaboration*	R - S		0.53	
~~5. Support Ratio~~	R - S			
~~6. Administrator Ratio~~	R - S			
~~7. PD Opportunities~~	R - P			
8. Satisfaction with Salary	R - P			0.63
9. Satisfaction with Benefits	R - P			0.81
10. Satisfaction with the Profession	R - P			0.41
11. Autonomy with Staffing*	R – P	0.93		
12. Autonomy with Budgeting*	R - P	0.57		

Notes. Model fit for "school climate" factor with distributed leadership, trust, innovation, and collaboration: CFI = 0.91, RMSEA < 0.08, SRMR = 0.05, $\alpha = 0.61$. Model fit for "job resources" factor with satisfaction with benefits, salary, and the profession: CFI = 0.95, RMSEA < 0.02, SRMR = 0.03, $\alpha = 0.60$. Autonomy factors not interpreted. Variables with factor loadings below acceptable thresholds (0.40) are crossed out.

Table 17.
Moderation Model

	Coefficients (SE)
Sat	9.04***
	(0.10)
Student Demands$_{dev}$	-0.10***
	(0.02)
Climate Resources$_{dev}$	0.43***
	(0.01)
Job Resources$_{dev}$	0.56***
	(0.02)
Climate Resources * Demands	0.04***
	(0.01)
Job Resources * Demands	0.05*
	(0.03)
Female	0.07**
	(0.03)
Age group	0.08***
	(0.02)
Exp school	0.01***
	(0.00)
Rural	-0.18***
	(0.04)
Suburban	-0.05
	(0.03)
Constant	
Random Effects Variance Components	
σ^2 (Variance (r_{ij}))	2.56
τ_{00} (Variance of Intercept)	0.23
Observations	15,458
Number of Groups	48

Notes. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 18.
Model Buildup Estimates for Multilevel Combined Model

	Model 8 Resources + Contextual Variables	Model 9 Demands + Contextual Variables	Model 10 Resources + Demands + Contextual Variables
Sat	7.70***	9.02***	7.21***
	(0.57)	(0.47)	(0.74)
Distributed Leadership$_{cwc}$	0.06***		0.07***
	(0.01)		(0.01)
Trust$_{cwc}$	0.11***		0.10***
	(0.01)		(0.01)
Innovation$_{cwc}$	0.15***		0.14***
	(0.01)		(0.01)
Collaboration$_{cwc}$	0.03***		0.02***
	(0.01)		(0.01)
PD$_{cwc}$	0.04***		0.04***
	(0.01)		(0.01)
Salary$_{cwc}$	0.07***		0.06***
	(0.02)		(0.02)
Mean salary	0.66***		0.79***
	(0.23)		(0.22)
Benefits$_{cwc}$	0.23***		0.21***
	(0.02)		(0.02)
Sat Profession$_{cwc}$	0.35***		0.35***
	(0.01)		(0.01)
Admin Time$_{cwc}$		-0.01*	0.00
		(0.00)	(0.00)
Accountability$_{cwc}$		0.04***	-0.01
		(0.01)	(0.01)
Mean Accountability		-0.22**	-0.26***
		(0.11)	(0.10)
Stress$_{cwc}$		-0.08***	-0.02***
		(0.01)	(0.01)
Barrier$_{cwc}$		-0.31***	-0.08***
		(0.01)	(0.01)
Short Teach$_{cwc}$		-0.05**	0.01
		(0.02)	(0.02)
Mean Short Teach		0.33	0.54**
		(0.28)	(0.26)
Violence$_{cwc}$		-0.12***	-0.05***
		(0.01)	(0.01)
Turnover$_{cwc}$		-0.20**	-0.12*
		(0.08)	(0.07)
Female	0.06**	0.09***	0.06**
	(0.02)	(0.03)	(0.02)

Age	0.03*	0.07***	0.02	
	(0.02)	(0.02)	(0.02)	
Exp school	0.01***	0.02***	0.01***	
	(0.00)	(0.00)	(0.00)	
Rural	-0.06***	-0.21 ***	-0.08***	
	(0.01)	(0.04)	(0.04)	
Suburban	-0.01	-0.05	-0.00	
	(0.01)	(0.03)	(0.02)	
Random Effects Variance Components				
σ^2 (Variance (r_{ij}))	2.09	2.92	2.07	
τ_{00} (Variance of intercept)	0.19	0.20	0.16	
Variance Explained				
σ^2	0.01[a]	0.00[b]	0.01[c]	0.29[d]
τ_{00}	0.14	0.09	0.16	0.27
Model Fit				
Model Deviance	-55435.66	-60577.44	55283.48	
Log Likelihood	-27717.83	-30288.72	-27641.74	
Estimated Parameters	17	17	25	
AIC	55469.66	60611.44	55333.48	
BIC	55599.64	60741.42	55380.26	
LR Test	0.00[a]	0.00[b]	0.00[c]	0.00[d]
Observations	15,458	15,458	15,458	
Number of Groups	48	48	48	

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Models tested using FEML/FIML. Variance explained tested against the null model. LR tested against previous model. Fixed effects tested with t-test. Hypotheses for fixed effects are: parameter = 0 versus parameter 0; *** = significant at p < 0.001, ** = significant at p < 0.01 * = significant at p = 0.05. AIC =Akaike's information criterion, BIC = Bayesian information Criterion. LR test = log likelihood ratio test, ICC = intraclass correlation

[a] For resources model 8 compared to resources Model 3.

[b] For demands model 9 compared to demands Model 3.1.

[c] For the combined model against resources Model 8.

[d] For the combined model against the demands Model 9.

Table 19.

Weighted Means, Standard Deviations and T-Tests from Subsamples with and Without Country Level Data and USA Subsample After Multiple Imputation

	Subsample without Country-Level Data		Subsample with Country-Level Data			USA Subsample		
Variable	*Mean*	*SD*	*Mean*	*SD*	*T-test*	*Mean*	*SD*	*T-test*
Dependent Variable								
Principal job satisfaction	9.52	1.88	9.64	1.83	-3.89***	10.15	1.60	-3.64***
Demands								
Administrative time	24.72	13.59	29.2	14.74	-19.38***	24.75	14.62	3.91***
Accountability	2.86	1.45	2.13	1.27	33.40***	2.05	1.38	0.81
Workload stress	9.86	1.98	9.91	1.95	-1.66	9.66	2.22	1.69
Barriers to PD	1.58	1.08	1.65	1.11	-3.73***	1.52	1.05	1.55
Shortage of teachers	1.57	0.69	1.56	0.63	1.28	1.37	0.61	3.80***
Student safety issues	6.98	2.04	6.99	2.03	-0.11	7.45	1.88	-2.95***
Teacher turnover	0.09	0.22	0.11	0.14	-4.87***	0.08	0.09	2.10****
Resources								
Distributed leadership	11.99	2.12	11.98	2	0.42	12.09	1.86	-0.73
Trust in teachers	12.18	2.05	12.07	2.03	3.37***	12.47	2.51	-2.55***
Organizational innovation	12.5	2.07	12.41	2.08	2.59***	12.06	2.05	2.20***
Collaboration	10.87	2.31	10.74	2.01	3.73***	11.16	2.76	-2.70***
PD opportunities	1.97	1.06	1.57	1.09	22.82***	1.95	0.99	-4.54***
Satisfaction with profession	12.07	1.91	11.98	2.04	2.77***	12.08	2.04	-0.60***
Level 1 Control Variables								
Female	0.52	0.50	0.44	0.50	9.59***	0.37	00.48	1.71*
Age (groups)	2.63	0.83	2.71	0.84	-5.95***	2.25	0.84	7.01***
Years teacher	18.25	10.6	19.41	10.84	-6.63***	11.18	6.87	9.86***
Years principal at the school	6.29	6.36	6.49	6.48	-1.91***	4.74	4.74	3.49***
Rural	0.20	0.40	0.13	0.33	13.01***	0.06	0.24	2.56***
Suburban	0.32	0.47	0.49	0.50	-21.71***	0.59	0.49	-2.45***
Level 2- Country Variables								
Principal salaries	-	-	46,011	17,501		85,798.01	0	-30.97***
Relative earnings	-	-	0.98	0.22		1.03	0	-2.31***
Spending per student	-	-	8,199	2,674		12,184	0	-21.06***
ED spending as %GDP	-	-	21.10	3.49		21	0	-1.57
Autonomy	-	-	31.97	20.65		16	0	10.53***

Societal value of the profession	-	-	2.42	0.47	2.44	0	-11.20***
Number of Countries	21		27		1		
Number of Principals	6,706		8,752		164		

Table 20.
Model Buildup Estimates for Country-Level Multilevel Resources Model

	Model 11 Unconditional Model	Model 12 + Resource Variables	Model 13 + Control Variables	Model 14 Contextual Variables	Model 15 + Contextual Country Level Resources
Sat	9.64***	9.64***	9.40***	7.02***	6.12***
	(0.10)	(0.11)	(0.13)	(0.80)	(1.07)
Dist Leader$_{cwc}$		0.07***	0.07***	0.07***	0.07***
		(0.01)	(0.01)	(0.01)	(0.01)
Trust$_{cwc}$		0.11***	0.10***	0.10***	0.10***
		(0.01)	(0.01)	(0.01)	(0.01)
Innovation$_{cwc}$		0.15***	0.15***	0.15***	0.15***
		(0.01)	(0.01)	(0.01)	(0.01)
Collaboration$_{cwc}$		0.02***	0.02***	0.02***	0.02***
		(0.01)	(0.01)	(0.01)	(0.01)
PD$_{cwc}$		0.04**	0.04**	0.04**	0.04**
		(0.01)	(0.01)	(0.01)	(0.01)
Salary$_{cwc}$		0.04*	0.03*	0.03	0.03
		(0.02)	(0.02)	(0.02)	(0.02)
Mean salary				0.99***	1.32***
				(0.33)	(0.45)
Benefits$_{cwc}$		0.20***	0.19***	0.19***	0.19***
		(0.02)	(0.02)	(0.02)	(0.02)
Sat Profession$_{cwc}$		0.34***	0.34***	0.34***	0.34***
		(0.01)	(0.01)	(0.01)	(0.01)
Female			0.07**	0.07**	0.07**
			(0.03)	(0.03)	(0.03)
Age			0.05**	0.05**	0.05**
			(0.02)	(0.02)	(0.02)
Exp school			0.01***	0.01***	0.01***
			(0.00)	(0.00)	(0.00)
Rural			-0.06	-0.06	-0.06
			(0.05)	(0.05)	(0.05)
Suburban			0.00	0.01	0.01
			(0.03)	(0.03)	(0.03)
GDP					0.06
					(0.04)
Salaries					-0.00
					(0.00)
Relative earn					0.02
					(0.52)
Spending					-0.00
					(0.00)

Value					-0.21
					(0.43)
Autonomy					-0.00
					(0.00)
Random Effects Variance Components					
σ^2 (Variance (r_{ij}))	3.04	2.02	2.01	2.01	2.01
τ_{00} (Variance of Intercept)	0.31	0.31	0.31	0.22	0.20
Variance Explained					
σ^2		0.34	0.34	0.01	0.01
τ_{00}		0.00	0.00	0.29	0.09
Model Fit					
Model Deviance	34,671.18	31,102.34	-31,065.66	32,832.11	31,053.98
Log Likelihood	-17,335.59	-15,551.17	-15,532.83	-16,416.05	-15, 526.99
Estimated Parameters	3	11	16	17	23
AIC	34,675.18	31,124.35	31,097.66	32,866.1	31,099.98
BIC	34,696.41	31,202.2	31,210.89	32,987.3	31,262.75
LR Test		0.00	0.00	0.01	0.00
ICC	0.60				

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Models tested using FEML/FIML. Variance explained tested against the null model. LR tested against previous model. Fixed effects tested with t-test. Hypotheses for fixed effects are: parameter = 0 versus parameter 0; *** = significant at p < 0.001, ** = significant at p < 0.01 * = significant at p = 0.05. AIC =Akaike's information criterion, BIC = Bayesian information Criterion. LR test = log likelihood ratio test, ICC = intraclass correlation

Table 21.
Model Buildup Estimates for Country-Level Multilevel Demands Model

	Model 11.1 Unconditional Model	Model 12.1 + Demands Variables	Model 13.1 + Control Variables	Model 14.1 Contextual Variables	Model 15.1 + Contextual Country Level Resources
Sat	9.48***	9.48***	9.23***	9.43***	5.56**
	(0.07)	(0.07)	(0.11)	(0.63)	(2.39)
Admin Time$_{cwc}$		-0.01***	-0.01***	-0.01***	-0.01***
		(0.00)	(0.00)	(0.00)	(0.00)
Accountability$_{cwc}$		0.04**	0.04**	0.04**	0.02
		(0.02)	(0.02)	(0.02)	(0.02)
Mean Accountability				-0.11	0.24
				(0.13)	(0.41)
Stress$_{cwc}$		-0.08***	-0.08***	-0.08***	-0.07***
		(0.01)	(0.01)	(0.01)	(0.01)
Barrier$_{cwc}$		-0.30***	-0.29***	-0.29***	-0.28***
		(0.02)	(0.02)	(0.02)	(0.02)
Short Teach$_{cwc}$		-0.07*	-0.06*	-0.06*	-0.09**
		(0.03)	(0.03)	(0.03)	(0.04)
Mean short teach				0.03	0.88
				(0.37)	(0.69)
Violence$_{cwc}$		-0.11***	-0.11***	-0.11***	-0.10***
		(0.01)	(0.01)	(0.01)	(0.01)
Turnover$_{cwc}$		-0.07	-0.04	-0.04	-0.09***
		(0.10)	(0.10)	(0.10)	(0.02)
Female			0.13***	0.13***	0.15***
			(0.04)	(0.04)	(0.04)
Age			0.04	0.04	0.03
			(0.03)	(0.03)	(0.03)
Exp school			0.02***	0.02***	0.01***
			(0.00)	(0.00)	(0.00)
Rural			-0.12**	-0.12*	-0.03
			(0.06)	(0.06)	(0.07)
Suburban			-0.04	-0.04	-0.04
			(0.05)	(0.05)	(0.05)
GDP					0.07
					(0.06)
Salaries					0.00
					(0.00)
Relative earn					-1.23
					(0.82)
Spending					0.00
					(0.00)

Value					0.54
					(0.41)
Autonomy					-0.00
					(0.00)
Random Effects Variance Components					
σ^2 (Variance (r_{ij}))	2.78	2.55	2.54	2.53	2.50
τ_{00} (Variance of Intercept)	0.13	0.13	0.13	0.13	0.10
Variance Explained					
σ^2		0.08	0.09	0.01	0.01
τ_{00}		0.00	0.00	0.01	0.23
Model Fit					
Model Deviance	27,661.18	27,035.86	26,988.56	-26,987.84	20,254.68
Log Likelihood	-13,830.59	-13,517.93	-13494.28	-13,493.92	-10,127.34
Estimated Parameters	3	10	15	17	23
AIC	27667.17	27,055.86	27,018.56	27,021.85	27,021.85
BIC	27687.79	27,124.6	27,121.67	27,138.71	27,138.71
LR Test		0.00	0.00	0.71	0.00
ICC	0.50				

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Models tested using FEML/FIML. Variance explained tested against the null model. LR tested against previous model. Fixed effects tested with t-test. Hypotheses for fixed effects are: parameter = 0 versus parameter 0; *** = significant at p < 0.001, ** = significant at p < 0.01 * = significant at p = 0.05. AIC =Akaike's information criterion, BIC = Bayesian information Criterion. LR test = log likelihood ratio test, ICC = intraclass correlation.

Table 22.
Coefficients and Robust Standard Errors for USA Subsample (N=164)

	Model 16 Demands	Model 17 Resources	Model 18 Demands, Resources + Control
Sat	10.52***	0.96	-0.01
	(0.73)	(0.93)	(1.18)
Accountability	0.12		0.09
	(0.09)		(0.07)
Short Teach	-0.30		-0.22
	(0.18)		(0.17)
Violence	-0.03		0.04
	(0.08)		(0.06)
Dist Lead		0.09*	0.14**
		(0.05)	(0.06)
Trust		0.07*	0.06
		(0.04)	(0.05)
Innovation		0.11*	0.11**
		(0.06)	(0.05)
Collaboration		-0.00	-0.01
		(0.04)	(0.04)
Salary		0.05	0.01
		(0.12)	(0.13)
Benefits		0.43**	0.39**
		(0.18)	(0.18)
Sat Profession		0.37***	0.37***
		(0.07)	(0.05)
Age			0.13
			(0.13)
Exp Teach			0.02
			(0.01)
Exp School			0.02
			(0.02)
Rural			0.17
			(0.42)
Suburban			0.25
			(0.21)
R-Squared	0.02	0.45	0.48
F	1.68	16.48	8.92

Notes. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Appendix C: Survey Questions

Full Items for Dependent Variable (PJOBSAT Scale) from 2018 TALIS[1]

44. We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?

Please mark one choice in each row.	Strongly disagree	Disagree	Agree	Strongly agree
e) I enjoy working at this school.	□0	□1	□2	□3
g) I would recommend this school as a good place to work.	□0	□1	□2	□3
i) I am satisfied with my performance in this school.	□0	□1	□2	□3
j) All in all, I am satisfied with my job.	□0	□1	□2	□3

[1] *Note:* Scale was recoded from 1-4 to 0-3 to aid in interpretation.

Independent Demands Principal-Level Variables from the 2018 TALIS[2]

Human resources responsibilities

29. To what extent is this school's capacity to provide quality instruction currently hindered by any of the following issues?

Please mark one choice in each row.

	Not at all	To some extent	Quite a bit	A lot
a) Shortage of qualified teachers.	□1	□2	□3	□4
b) Shortage of teachers with competence in teaching students with special needs.	□1	□2	□3	□4
a) Shortage of vocational teachers.	□1	□2	□3	□4

The proportion of time spent on administrative duties per week.

21. On average throughout the school year, what percentage of time in your role as a principal do you spend on the following tasks in this school?

Rough estimates are sufficient. Please write a number in each row. Write 0 (zero) if none.

Please ensure that responses add up to 100%.

a) ⌊_⌊_⌊_⌊_ % Administrative tasks and meetings.
Including regulations, reports, school budget, preparing timetables and class composition, responding to requests from district, regional, state, or national education officials.

Accountability.

23. On average, how often is each teacher formally appraised in this school by the following people?

Please mark one choice in each row. If none of the response choices reflect this school's situation, please choose the one that is closest to it.

	Never	Less than once every two years	Once every two years	Once per year	Twice or more per year
e) External individuals or bodies (e.g. inspectors, municipality representatives, districts/jurisdictions office personnel, or other persons from outside the school).	□1	□2	□3	□4	□5

Work Stress.

43. Thinking about your job at this school, to what extent are the following sources of stress in your work?

Please mark one choice in each row.

	Not at all	To some extent	Quite a bit	A lot
a) Having too much teacher appraisal and feedback work to do	□1	□2	□3	□4
b) Having too much administrative work to do (e.g. filling out forms).	□1	□2	□3	□4
c) Having extra duties due to absent school staff.	□1	□2	□3	□4

[2]*Note:* TALIS-created scales are coded according to TALIS methodology as noted in Technical Manual for TALIS 2018 (p. 198-208; TALIS-OECD2018).

Barriers to professional development.

9. How strongly do you agree or disagree that the following present barriers to your participation in professional development?

Please mark one choice in each row.	Strongly disagree	Disagree	Agree	Strongly agree
a) I do not have the pre-requisites (e.g. qualifications, experience, seniority).	□1	□2	□3	□4
b) Professional development is too expensive.	□1	□2	□3	□4
c) There is a lack of employer support.	□1	□2	□3	□4
d) Professional development conflicts with my work schedule.	□1	□2	□3	□4
e) I do not have time because of family responsibilities.	□1	□2	□3	□4
f) There is no relevant professional development offered.	□1	□2	□3	□4
g) There are no incentives for participating in professional development.	□1	□2	□3	□4

Shortage of Infrastructure

29. To what extent is this school's capacity to provide quality instruction currently hindered by any of the following issues?

Please mark one choice in each row.	Not at all	To some extent	Quite a bit	A lot
d) Shortage or inadequacy of instructional materials (e.g. textbooks).	□1	□2	□3	□4
e) Shortage or inadequacy of digital technology for instruction (e.g. software, computers, tablets, smart boards).	□1	□2	□3	□4
f) Insufficient Internet access.	□1	□2	□3	□4
g) Shortage or inadequacy of library materials.	□1	□2	□3	□4
i) Shortage or inadequacy of instructional space (e.g. classrooms).	□1	□2	□3	□4
j) Shortage or inadequacy of physical infrastructure (e.g. classroom furniture, school buildings, heating/cooling, and lighting).	□1	□2	□3	□4

Socio-economic disadvantage, proportion of non-native students, students with special needs

17. Please <u>estimate</u> the broad percentage of students in this school who have the following characteristics.

'Special needs' students are those for whom a special learning need has been formally identified because they are mentally, physically, or emotionally disadvantaged. [Often they will be those for whom additional public or private resources (personnel, material or financial) have been provided to support their education.] 'Socio-economically disadvantaged homes' refers to homes lacking the basic necessities or advantages of life, such as adequate housing, nutrition or medical care.

	None	1% to 10%	11% to 30%	31% to 60%	More than 60%
a) Students whose first language is different from the language(s) of instruction or from a dialect of this/these languages(s).	□1	□2	□3	□4	□5
b) Students with special needs.	□1	□2	□3	□4	□5

c) Students from socio-economically disadvantaged homes.	□1	□2	□3	□4	□5

Teacher turnover and absences.

14. Please indicate the number of staff (head count) in this school for each of the categories below.

Include part-time staff and staff that began work during the year. Count any staff member for any reason, including retirement, maternity/paternity leave, and temporary teaching.

	0	1-5	6-10	11-15	16 +
b) Teachers who permanently left this school during the last 12 months.	□1	□2	□3	□4	□5
c) Teachers absent for the most recent Tuesday that school was in session.	□1	□2	□3	□4	□5

School safety issues.

30. In this school, how often do the following occur amongst students?

Please mark one choice in each row.	Never	Less than monthly	Monthly	Weekly	Daily
b) Intimidation or bullying among students (or other forms of verbal abuse).	□1	□2	□3	□4	□5
c) Physical injury caused by violence among students.	□1	□2	□3	□4	□5
d) Intimidation or verbal abuse of teachers or staff.	□1	□2	□3	□4	□5

The societal value of principal profession (level 2).

44. We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?

Please mark one choice in each row.	Strongly disagree	Disagree	Agree	Strongly agree
h) I think that the teaching profession is valued in society.	□1	□2	□3	□4

Independent Resources Principal-Level Variables from the 2018 TALIS

Principal trust in teachers.

27. To what extent do the following statements apply to this school?

Please mark one choice in each row.

	Not at all	To some extent	Quite a bit	A lot
a) Teachers understand the school's curricular goals.	□1	□2	□3	□4
b) Teachers succeed in implementing the school's curriculum.	□1	□2	□3	□4
c) Teachers hold high expectations for student achievement.	□1	□2	□3	□4

Professional development opportunities.

7. During the last <u>12 months</u>, did you participate in any of the following professional development activities <u>aimed at you as a principal</u>?

Professional development is defined as activities that aim to develop an individual's professional skills, knowledge and expertise. Please mark one choice in each row.

	Yes	No
a) Courses/seminars about subject matter, teaching methods or pedagogical topics.	□1	□0
b) Courses/seminars about leadership.	□1	□0
c) Courses/seminars attended in person.	□1	□0
d) Online courses/seminars.	□1	□0
e) Education conferences where teachers, principals and/or researchers present their research or discuss educational issues.	□1	□0
f) Formal qualification program (e.g. a degree program).	□1	□0
g) Peer and/or self-observation and coaching as part of a formal arrangement.	□1	□0
h) Participation in a network of principals formed specifically for the professional development of principals	□1	□0
i) Reading professional literature.	□1	□0
j) Other.	□1	□0

Salary and terms of job benefits.

45. How strongly do you agree or disagree with the following statements?

Please mark one choice in each row.

	Strongly disagree	Disagree	Agree	Strongly agree
a) I am satisfied with the salary I receive from my work.	□1	□2	□3	□4
b) Apart from my salary, I am satisfied with the terms of my principal contract (e.g. benefits, work schedule).	□1	□2	□3	□4

Autonomy.

20. Regarding this school, who has a significant responsibility for the following tasks?

A 'significant responsibility' is one where an active role is played in decision making.
Please mark as many choices as appropriate in each row.

	Principal	Other members of the school management team	Teachers (not as a part of the school management team	School governing board	Local, regional, state, or national authority
a) Appointing or hiring teachers.	□1	□1	□1	□1	□1
b) Dismissing or suspending teachers from	□1	□1	□1	□1	□1

employment.

c) Establishing teachers' starting salaries, including setting pay scales.	□1	□1	□1	□1	□1
d) Determining teachers' salary increases.	□1	□1	□1	□1	□1
e) Deciding on budget allocations within the school.	□1	□1	□1	□1	□1
f) Establishing student disciplinary policies and procedures.	□1	□1	□1	□1	□1
g) Establishing student assessment policies, including national/regional assessments.	□1	□1	□1	□1	□1
h) Approving students for admission to the school.	□1	□1	□1	□1	□1
i) Choosing which learning materials are used.	□1	□1	□1	□1	□1
j) Determining course content, including national/regional curricula.	□1	□1	□1	□1	□1
k) Deciding which courses are offered.	□1	□1	□1	□1	□1

Job satisfaction with the profession.

44. We would like to know how you generally feel about your job. How strongly do you agree or disagree with the following statements?

Please mark one choice in each row.

	Strongly disagree	Disagree	Agree	Strongly agree
a) The advantages of this profession clearly outweigh the disadvantages.	□1	□2	□3	□4
b) If I could decide again, I would still choose this job/position.	□1	□2	□3	□4
d) I regret that I decided to become a principal.	□1	□2	□3	□4
f) I wonder whether it would have been better to choose another profession.	□1	□2	□3	□4

Distributed leadership.

26. How strongly do you agree or disagree with these statements as applied to this school?

Please mark one choice in each row.

	Strongly disagree	Disagree	Agree	Strongly agree
a) This school provides staff with opportunities to actively participate in school decisions.	□1	□2	□3	□4
b) This school provides parents or guardians with opportunities to actively participate in school decisions.	□1	□2	□3	□4
c) This school provides students with opportunities to actively participate in school decisions.	□1	□2	□3	□4
e) I make the important decisions on my own.	□1	□2	□3	□4

School staff resources and school management teams.

13. For each type of position listed below, please indicate the number of staff (head count) currently working in this school.

Staff may fall into multiple categories. Please write a number in each row. Write 0 (zero) if none.

a) Teachers, irrespective of the grades/ages they teach.
⌊_⌊_⌊_⌊_⌋ *Those whose main professional activity at this school is the provision of instruction to students.*

b) Personnel for pedagogical support, irrespective of the grades/ages they support.
⌊_⌊_⌊_⌊_⌋ *Including all teacher aides or other non-teaching professionals who provide instruction or support teachers in providing instruction, professional curriculum/instructional specialists, educational media specialists, psychologists, and nurses.*

d) School management personnel.
⌊_⌊_⌊_⌊_⌋ *Including principals, assistant principals, and other management staff whose main activity is management.*

Organizational innovation.

28. How strongly do you agree or disagree with the following statements?

Please mark one choice in each row.	Strongly disagree	Disagree	Agree	Strongly agree
a) This school quickly identifies the need to do things differently.	□1	□2	□3	□4
b) This school quickly responds to changes when needed.	□1	□2	□3	□4
c) This school readily accepts new ideas.	□1	□2	□3	□4
d) This school makes assistance readily available for the development of new ideas.	□1	□2	□3	□4

Collaborative environments.

26. How strongly do you agree or disagree with these statements as applied to this school?

Please mark one choice in each row.	Strongly disagree	Disagree	Agree	Strongly agree
f) There is a collaborative school culture which is characterized by mutual support.	□1	□2	□3	□4
g) The school staff share a common set of beliefs about teaching and learning.	□1	□2	□3	□4
i) This school encourages staff to lead new initiatives.	□1	□2	□3	□4
j) Teachers and students usually get on well with each other.	□1	□2	□3	□4
k) Teachers can rely on each other.	□1	□2	□3	□4

Principal-Level Control Variables from the 2018 TALIS

Principal gender.

1. Are you female or male?

Please mark one choice.

□1 Female
□0 Male

Principal age.

2. How old are you?

Please write a number.

Years

⌊_⌋⌊_⌋

Principal Education.

3. What is the highest level of formal education you have completed?

Please mark one choice.

□1 Below ISCED 2011 Level 3
□2 <ISCED 2011 Level 3>
□3 <ISCED 2011 Level 4>
□4 <ISCED 2011 Level 5>
□5 <ISCED 2011 Level 6>
□6 <ISCED 2011 Level 7>
□7 <ISCED 2011 Level 8>

Principal leadership experience in the school, principal leadership experience in general, teaching experience.

4. How many years of work experience do you have, regardless of whether you worked full- time or part-time?

Do not include any extended periods of leave such as maternity/ paternity leave. Please write a number in each row. Write 0 (zero) if none. Please round up to whole years.

a) Year(s) working as a principal <u>at this school</u>

⌊_⌋⌊_⌋

b) Year(s) working as a principal <u>in total</u>

⌊_⌋⌊_⌋

d) Year(s) working as a teacher in total (include any years of teaching)

⌊_⌋⌊_⌋

School-Level Control Variables from the 2018 TALIS

Urbanicity.

10. Which best describes this school's location?

Please mark one choice.

- □1 [A village, hamlet or rural area] (up to 3,000 people)
- □2 [Small town] (3,001 to 15,000 people)
- □3 [Town] (15,001 to 100,000 people)
- □4 [City] (100,001 to 1,000,000 people)
- □5 [Large city] (more than 1,000,000 people)

School funding.

12. Is this school publicly- or privately managed?

Please mark one choice.

- □1 Publicly managed
  This is a school managed by a public education authority, government agency, municipality, or governing board appointed by government or elected by public franchise.
- □0 Privately managed
  This is a school managed by a non-government organization, e.g. a church, trade union, business or other private institution.

School size.

16. What is the current school enrolment, i.e. the number of students of all grades/ages in this school?

Please write a number.

Students

|_|_|_|_|

School type.

15. Are the following levels and/or programs taught in this school and, if yes, are there other schools in the area that compete for students at that level and/or program?

Please indicate 'Yes' or 'No' in part (A) for each of the levels and/or programs listed below. If 'Yes' in part (A), please indicate in part (B) the number of other schools in this area that compete for students.

Level/program taught	Yes	No
a) ISCED 2011 Level 1	□1	□0
b) ISCED 2011 Level 2	□1	□0
c) ISCED 2011 Level 3	□1	□0
d) ISCED 2011 Level 3 general education programs	□1	□0
e) ISCED 2011 Level 3 vocational or technical education programs	□1	□0

Appendix D: Search Review and Methods

There are currently no published reviews of the research on principal job satisfaction (For a review of teacher satisfaction see D. P. Thompson et al., 1997). This review, therefore, included a wide range of peer-reviewed mixed methods, qualitative, and quantitative studies. This review employed pre-determined criteria to analyze, critique, and synthesize the literature. This approach can be distinguished from narrative reviews, which present a particular understanding the literature framed by the author's perspective (Bearman et al., 2012). By establishing review questions, inclusion and exclusion criteria, and articulating a search strategy from the outset, this review aimed to provide a higher degree of external validity to the findings, a chief concern in the creation of literature reviews. In the two decades since the GERM movement (Sahlberg, 2016), the proliferation of federal, state, central office and school-level data, along with instruments developed within the field of leadership studies, have made it possible to design studies that could more clearly determine the predictors and consequences of principals' satisfaction. Hierarchical linear modeling, experimental sampling methods, and structural equation modeling have also brought quantitative rigor into the field.

Inclusion and Exclusion Criteria

Three criteria guided the selection of these studies. First, this review sought studies designed explicitly to examine principal job satisfaction as a dependent variable. The particular methods used to capture job satisfaction was not considered at this point in the selection. Second, the studies had to examine only principal job satisfaction. Although teacher or superintendent job satisfaction helps contextualize the role of school leaders, studies that captured data about educational staff and principal job satisfaction without differentiating the two roles were not included (e.g., Sari, 2005). Third, dissertations and other grey literature were not included.

The decision to exclude grey literature in this study was carefully considered. Including grey literature can help to overcome some of the problems of publication bias (of bias against the null) while providing a more complete and objective picture of principal job satisfaction (Adams et al., 2017; Conn et al., 2003). Reports, dissertations, and master's theses are sources of empirical data that, despite being published by award-granting institutions, are not normally published in peer-reviewed journals or consistently indexed in conventional bibliographic databases (such as Google Scholar). Despite these considerations, the biggest consideration for not including dissertations was space. A search of dissertations and theses in ProQuest revealed several thousand works in the last twenty years. Assessing the quality, contributions, and limitations of those works would be beyond the scope of this dissertation. Not including grey literature can be considered one of the limitations of the review. This review also limited itself with studies of principal job satisfaction that have been published in English. This is an additional limitation (Conn et al., 2003).

To understand how the field has developed, how researchers have used theory to guide research, and how foundational studies have guided the contours of this research, this review did not set a limit on the age of studies. By surveying the nearly 70 years of research in this field, this review can also track the development of new methods and new research questions. Since the research questions and data concern schools around the world, the research was also not limited to specific countries. While most of the studies examine principal satisfaction in the United States, studies in Norway, Great Britain, Canada and elsewhere illustrate the consistency of many of the results.

Search Method

This quantitative literature review was conducted in the fall of 2019. The literature search used the research databases ERIC, JSTOR, EBSCO, and Google scholar. The search keys included combinations of school leadership, administration, principals, leadership, satisfaction, job satisfaction, dissatisfaction. Each identified study was included in an initial table. This search process continued until saturation when the search did not yield any new papers. The initial search produced over 60 articles. In the data coding phase, information from the articles selected articles were extracted and assessed using a coding table. The table included basic information, including research design, setting, sample, dependent variables, outcome variables, and conclusions. Once the codebook for all the articles was filled out, several rounds of analysis systematically developed central ideas by examining tropes, concepts, and themes within the reviewed studies.

Data Analysis

The critical synthesis examined the findings, instruments, and methods in the studies but was not a meta-analysis. Despite having the same dependent variables, a meta-analysis could not be conducted because these studies did analyze the same sets of relationships using the same instruments and using the same methods. The review, therefore, records the broad qualitative findings and, in some instances, reproduces quotes from principals from these studies that help paint a more complete picture. The review also reports regression coefficients and p-values for qualitative data when appropriate.